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EDQUAL PROJECT SMALL STAND ALONE PROJECT SOUTH AFRICA & GHANA

Designing school buildings as development hubs for learning

**Final Project Report for EdQual Project University of Bristol
5 November 2010**

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Abstract & Executive Summary

This report summarises the Schools as Hubs for Development, EdQual Small grants research project, the related research activity and its key findings. The project was initiated in February 2007 and the field research took place between July and October 2007 in South Africa and Ghana. The project was a collaboration between researchers at Edinburgh College of Art, UK, the Council for Scientific and Industrial Research (CSIR), Pretoria, South Africa and the Department of Architecture, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. Its key objective was to explore the hypothesis,

“school design influences learning outcomes, and can have a developmental effect for the communities in which the schools are located”

The literature reviewed confirmed that there was limited information from recent research regarding the influence of school design on educational quality or educational attainment. The field research was designed to investigate the state of contemporary schools in South Africa and Ghana in various urban and rural contexts and to attempt an understanding of what effects school design had on education quality experienced by pupils. It also explored what contribution these schools made to local community development.

The field research results and literature reviewed confirmed that school classrooms were often overcrowded but did provide the necessary ‘basic’ shelter for educational instruction. However interventions such as school feeding programmes and local crop growing in schools were also important for quality of pupils’ schooling experience and also to local community development; the school buildings and associated infrastructure being central to these other development activities. Built infrastructure for access to utilities such as safe and hygienic sanitation; comprising adequate school toilet facilities, access to water for hand-washing and drinking water, was also highlighted as being poorly provided or absent in the majority of schools surveyed.

Access to services such as electricity supply was also limited or non-existent in the Ghanaian schools surveyed. Fixed telecommunications access was also poor in schools both in Ghana and South Africa, outside of urban areas. Finally five out of the six case study schools visited in South Africa were designed to allow for the installation of ICT facilities, specifically computers, whilst none with these facilities were visited in Ghana. However, in the South African schools, where these facilities existed, these comprised desktop computers with software that was already dated. Furthermore, the schools with functioning computer labs had few if any outreach activities that extended ICT access to the local community.

The research findings recommend that schools should be designed to better serve communities local to the school as well as pupils with facilities, such as kitchens, dining space and libraries, transforming schools into community ‘learning hubs’. This could result in better pupil-retention, indirectly through improving school-community linkages

and involvement in supporting students and the general school community, as happened in the case study schools visited where school-feeding programmes had been implemented.

Adequate access to sanitation and electricity service provision is crucial to this transformation. For extended 'out-of-school-hours' use of the school facilities by the community, toilets, lighting, and power for ICT use is crucial.

Architects have historically had a role in developing school design guidelines, particularly UNESCO's building research divisions which had branches in Asia and Africa up until the 1970s. In high income countries, this involvement has continued, with the Building Schools for the Future programme, for example in the UK. In low income countries however there have also been recent schools which have had architectural involvement in design. In this report, specifically the Vukani and Dalweide Schools were architect designed, and have multipurpose spaces which are shared with the school and local community.

1.0 Introduction

Universal access to primary schools is a key millennium development goal, still proving difficult to deliver in low-income countries. Schools designed for the poorest pupils are often inadequate for the numbers who are enrolled, and increasingly for the needs and functions of basic learning spaces for today. The key issue is overcrowding; classrooms designed for forty regularly accommodate more than sixty due to the use of out dated international classroom design standards, on the assumption of unrealistically low class numbers. These schools also have poor access to infrastructure; electricity, drinking water, sanitation, and support facilities; including ICT/library spaces. The aim of the *School Buildings as Development Hubs Learning* project was to investigate whether design of the school built environment could influence education quality in low income countries and, more specifically, South Africa and Ghana.

Case studies were conducted of three schools in Ashanti Region, Ghana and, six schools in the Gauteng, KwaZulu Natal and Western Cape Provinces in South Africa, all of which were located in disadvantaged communities.

The case study survey process for the schools visited comprised a two-day visit to all ten schools in the survey. Due to the limited funding of the small scale project and time considerations, schools were chosen to where possible cover rural and urban locations across the different regions of each country surveyed. In Ghana however, the limited available time and organisational issues meant that case study schools from only the Ashanti region were surveyed.

The actual study comprised a physical survey of the school buildings, specifically classrooms, and other learning spaces, as well as sanitation facilities and provision for school feeding, in schools where this took place. Unstructured interviews with different stakeholders involved with the school, pupils, staff, parents and community members

living near the school also took place. Finally photography was used to record the use of the school infrastructure and facilities during the school day.

The majority of the schools included in the study had been built in the past decade, following a period of significant education policy change. In South Africa, the case study schools had all been built in the decade since the introduction of the National Education Policy in 1996,¹ which effectively ended the Nationalist separate racial education policies of the National Party, up until 1994. The successor regional education departments that are now responsible for schools delivery and planning with guidance from the National Government, are mandated to deliver non-racially differentiated schools for all children in South Africa. Furthermore in economically disadvantaged communities, schooling is fee-free, and the government school-feeding programme provides school meals for pre-primary and primary school-aged children.²

Contrastingly, Ghana's schools have undergone a radical funding transformation in the decade since the country's transition to popular democracy and neo-liberal economic policies.³ The country now has a thriving private education sector, with schools catering for all income ranges, but the State still provides basic education and a network of schools, from pre-primary to senior secondary for the majority of its citizens.⁴ Regional governments are responsible for funding the building and running of these schools. School planning and design however is done in association with the Government parastatal, Architectural and Engineering Services Ltd. (AESL), which designs and approves schools, based on UNESCO international planning and design criteria for schools.⁵

The project sought to analyse the case study findings, in order to respond to the key research question:

“does school design affect education quality ?”

The report summarises the key findings and also contextualises this field research component with through a review of school design and education policies. This is specifically in relation to Ghana and South Africa, but also as importantly within the general discussion of school quality in other parts of the South, including countries in Latin America and Asia that have similar educational needs to countries in sub-Saharan Africa. Where relevant also, reference is made to good practice and evidence from “Western” schools that have devised schemes and approaches to dealing with disadvantage and improving educational quality within challenging school settings.

¹ Republic of South Africa (1996)

² Republic of South Africa (2008), Partnership for Child Development (1999) Education Training Unit, (2010)

³ Ghana Government (2010), White, H. (2004)

⁴ *Aiyekoo!* (2007), Ghana Education Service 2007

⁵ Interview with AESL Ltd. (August 2007), and Ghana Education Service Kumasi (August 2007)

It concludes by identifying how best the key issues identified as a result of the research can be addressed through school design and planning modes. Two documents have been developed to respond to this need. Firstly, a “School Design Guidelines” leaflet is included which gives basic rules of thumb in school design and planning to communities, school councils, and smaller local government and non government organisations, who are usually the frontline stakeholders in school design provision in poor areas. Secondly an executive summary of recommendations to ensure good practice in schools design provision and planning has been drawn up which is aimed at regional and national education departments who are involved in developing and shaping National policies on schools.

The report is divided into five sections:

A Literature Overview, incorporating firstly a review of international literature on school design, and then a contextual review of literature focusing on the evolution of school infrastructure design, from pre-colonial to contemporary times in sub-Saharan Africa.

The Field Research: The description of the research undertaken, discussing the methodology process and results from the case study research and related research undertaken in connection with the project.

A Comparative analysis: This was undertaken to compare the Case Studies schools with each other and across the different characteristics and parameters, including country, location, and facilities provision.

Identified Issues and Findings: Seeking to highlight the key issues that the research project uncovered, and contextualising this within a wider discourse on school infrastructure and its possible effect on education quality and community development.

Conclusions: Which seeks to provide a critical summary of the final outcome of the “Designing Schools as Learning Hubs for Development”, EdQual small research project critically viewing the successes and failures of the field research undertaken, the lessons learnt and implications of the highlighted key project findings.

2.0 Literature Overview

African schools, as common with those in other emerging countries, have had a long and varied history of planning and design. Commencing from pre-colonial times, the missionary project sought to ensure that alongside Christianity, education and health projects were promoted and developed. “Western” style schools thus are not new to Africa, however their function over time and space has changed considerably, from being literally shelters from the elements where the three ‘Rs’ and religion were taught to native tribes, to today’s complement of schools that can include libraries, technology laboratories, and computing suites.⁶

⁶ For more on schools and education in Africa there have been numerous UNESCO Reports, for South Africa, and Kallaway’s (2002) edited “History of Education under Apartheid”.

There was a temporary improvement of educational provision in then newly 'independent' states of West and East Africa in the mid to late 1960s. However despite this, the move towards attaining the original 1960's UNESCO aim to deliver global "education for all" by 2000, from the late 1970s effectively ended with the ensuing global economic crises, and the hardening of Nationalist Party rule in South Africa, that followed this 'independence period' States in West and East Africa. The combination of reduced education spending, poor resourcing and better health care, which lowered child mortality rates, meant there were pressures on the existing limited education systems in place to expand education delivery in most of sub-Saharan Africa.

This was especially true in Africa, where the struggle to provide improved literacy and education stalled in the 1970s. In most of Africa, with the cuts in social spending that have occurred since the late 1970s, there has been limited spending on school infrastructure. Even where spending programmes had been sanctioned, such as the Universal Primary Education Scheme in Nigeria, and its ensuing technical education initiative, the buildings and infrastructure built to accommodate these schemes have remained basic, often without electricity and sanitation that would have ensured the extended use of the buildings within the community (Bray, 1981).

Due to the unique circumstances of the 'apartheid' state, education in South Africa was both segregated and prescribed by the nationalist government. For school buildings this meant that strict building codes were in place for schools to be built in the different educational departments that covered all racial groupings in the country (Van Straaten et al:1967). Compared with schools found elsewhere in Africa, some South African township schools did have significantly better facilities planned and built. However, given the 'apartheid' education system that was supposed to be in place, the effective boycott of such schools and occasional arson by students, ensured these schools retained little credibility as edifices for learning.

Despite the decline in the global economy and national funding of education, the elite social classes in West and East Africa, have ensured that the 'top' schools from colonial times, and more recent additions, are able to guarantee their children a near facsimile of a 'Western' private or 'public' school education to GCSE-O-level standard or higher locally. In post-apartheid South Africa, the rise of the historic top 'white' colleges and more recent private fee-paying 'international' schools rapidly filled the post-apartheid demand for independent education, and now caters to an increasingly multi-cultural, multi-race, affluent middle class.

Since the mid-1990s, there has been the easing of the World Bank's structural adjustment conditions. This has had a direct effect on education, as from the 1980s to mid-1990s, the Bank's approach to education funding had focused, less on buildings and infrastructure and more on improved teacher education and school resourcing. Parents and communities were tasked with contributing towards the provision of school buildings and infrastructure, with the state providing supplementary funding. This remained a difficult

task for the poorest parents in ‘work-poor’ communities where financial contributions were limited.

In South Africa, the realisation of self-rule with the ascension of the ANC to power in 1994 resulted in the complete re-writing of educational policy and handing over decisions on school design to the provincial level, with less influence from the central government. Despite this however, standards and norms for space and school design remain in place and determined from the central government in Pretoria (see Gazette, year; Department of Education of the Republic of South Africa).

Elsewhere in Africa, the stark dichotomy between the poorly-resourced state sector education system and the private schools has become clearer, as education in countries such as Ghana and Nigeria in West Africa have become more free market influenced. Ghana, for example, does have a state sector education system that receives government funding, but for many of the more affluent the private sector education system is thriving and in direct competition with the state sector’s top schools (Aiyekoo, 2009).

More recently, there has been some re-interpretation of school design through one-off school project commissions, in many emerging countries, including those in Africa. This has allowed architects to re-engage with the avant-garde Latin American, Freire-inspired ideas of ‘classrooms without walls’, (Freire, 1970) and also some of the earlier ‘mission’ station ethos allowing integrated facilities such as education, healthcare and demonstration agriculture projects to all take place within an integrated ‘hub’ for development. This transformation has begun to take on different forms, school feeding programmes have become an increasingly popular way for governments and supporting NGOs to support children in school, and also extend the developmental ethos of the school.

–School Design in sub-Saharan Africa, the historical context

Africa has had a wealth of schools designed by various agencies, colonisers and other organisations with African educational welfare in mind for nearly two centuries. Pre – Western education traditions and facilities are outwith the scope of this report, however, Graham:1971, Davidson:1990, Dickson, 1995 and others discuss these early systems and the spaces within which this ritualised learning took place. Of interest also is the continued existence of ‘madrassa’ religious schools in much of North Africa, the Sahel region of West Africa including Northern Ghana, East Africa and elsewhere in the Middle East, which exist in parallel with schools offering access to basic ‘Western’ education, also providing an Islamic educational equivalent to youngsters, in gender segregated classes, with teachings from the Koran as part of the curriculum.⁷ The study of these, however, is beyond the scope of this literature review.

Pre-Colonial to Colonial School Design and Education Quality

Both Ghana and South Africa have had historic associations with religious organisations and had the impact of the “mission station” with its multi-faceted approach to education, health, proselytisation, and occasionally agriculture or local industry, such as brick and

⁷ Olurode, L, (2010), Mwaura, Sylva and Malmberg, (2008)

cabinet making.⁸ School design, was thus not seen as a separate built environment function in the “mission environment” but an integral part of the evangelical development project, with the school building, the church, the clinic or dispensary and other structures, all existing within the mission grounds, and close to the local villages that benefitted from their proselytising mission.⁹ Similar historic, “mission” infrastructure is found elsewhere in the world including South-East Asia and Latin America who had close associations with missionary enterprise from the mid 19th century up until the first half of the 20th century.¹⁰

In much of Africa, the colonisation of the continent included not just a change in governing power relations, but the introduction of a new social infrastructure for housing health and schools. The Colonial Government, in its wisdom, did not close down missionary schools; it simply regulated them. In many colonies mission school existed alongside the newer Government-run colleges, that were built to educate the administrative classes in Africa and India. In the first half of the twentieth century demand for education was not yet overwhelming and the initial jobs of the school inspectors was to assess the competence of education in these institutions by the pass rates they were able to achieve in national examinations. The condition of the schools however also was commented upon, schools which were felt to be well kept and in good order and had good results had the best ratings, which invariably meant the schools with the best funding, essentially those run by the large catholic and protestant missions and the government-run colleges.¹¹

School plans and designs of this period, in the missionary, government, and emerging private sector, showed their alignment to the late 19th century British education system. Education quality up until the 1950s in much of West and South Africa remained high, although school enrolment was limited to the elite and those able to gain competitive scholarships into elite Colleges.¹² However, with the return of Commonwealth soldiers from the Second World War and the agitation for independence amongst Colonies in the British Empire, including Africa, indigenous demand for access to education at all levels rose.

Educational Design and Building History in post-1960 Ghana

The response in Ghana was the launch of ‘The First Gold Coast school buildings programme’ that resulted in the construction of new and the upgrading of existing primary and secondary schools throughout the Gold Coast.¹³ Architecturally this period was significant as the commission to build these ‘new’ schools was given to the young British architects Maxwell Fry and Jane Drew, who designed the school to the new

⁸ See for Example Shepherd (1940)

⁹ Uduku (2001) The colonial face of educational space

¹⁰ See MacKenzie (1993) and Kallaway (2009).

¹¹ See Echeruo (1970), Hilliard (1957)

¹² See Fafunwa, (198?) Kallaway (2002)

¹³ Ghana Education Service (accessed August 2010)

International Modern style standards, to allow for the scientific maximum amount of daylighting and to respond to the tropical climatic conditions of sub-Saharan Africa. (images 1 – 3 show the evolution of the school building from the precolonial missionary school to the 1960s modern school building style). Ghana attained an all time high literacy rate of 30%+ in the early 1960s in the first years of political independence from Britain¹⁴. All commentators agree that the decline in enrolment in Ghana's schools maps closely onto the end of the first republic and the change to military rule from 1966. Spending on basic education remained in decline through the 1970s and 80s, until the country's adoption of IMF structural adjustment measures in the 1990s. The funding for basic education as with elsewhere in the world, corresponded with the IMF/World Bank recommendations which focused on 'up-skilling' teachers and the construction of basic classroom blocks via 'sweat equity', or community construction schemes. Various authors Bray, (1986) (Uduku (1992), have commented on the failure of this approach to either improve educational quality or deliver the needed educational infrastructure to the most needy students and families¹⁵.

Educational Design and Building in post-WW2 South Africa

In South Africa, the post-World War Two political situation brought the Nationalist party into power, and educational policy changed drastically in the country. Prior to 1945, South African education policy was similar to that found elsewhere in British Colonial Africa.¹⁶ With the establishment of Nationalist rule from 1945 until democratic rule was established in 1994, education policy was framed to correspond with the separate but equal "apartheid" policies of the period.¹⁷ For schools this meant at its peak there were 19 education departments to encompass the different racial categories and native homelands (Bantustans) which all had different education systems and criteria for school design.

By the late 1950s onwards, South African education policy had evolved to incorporate the codified school planning and design guidelines, which determined the design of schools; from size of classrooms, facilities available, and quality of construction, in relation to the four different racial categories of students, and the location of schools in the 19 educational regions including African 'native homelands' or 'bantustans', within the apartheid state. Appropriate scientific and 'social' guidelines were researched and developed to produce the appropriate space standards of classrooms, equipment and teaching curriculum for the different schools.¹⁸

From the late 1960s onwards up until the official post-1994 end of the Nationalist Party Education policy in South Africa, a number of not for profit and non governmental organisations were involved in running alternative, non government approved education

¹⁴ World of Congress Library – accessed August 2010

¹⁵ The World Bank view however is more positive, see (White /World Bank 2004)

¹⁶ See Kallaway (2002)

¹⁷ National Education Policy South Africa (1996)

¹⁸ The CSIR and other bodies were involved in the research and development of these guidelines. **The CSIR booklet** "Ventilation and Thermal Considerations in School Building Design", Van Straaten et al (1967) is an example.

provision for racially and socially disadvantaged groups in the the country. The largest of these organisations was the Urban Foundation, which had US and other modes of international backing which enabled it build 'model' schools, which were conventional in design but had facilities such as school halls and computers provided for poor township communities and in other areas of educational need. Many smaller NGOs also were involved in either providing education 'out of hours' as evening classes, or providing pre-school and primary education, in townships and locations of low education provision.

Kallaway, (2002), and others have described the mechanics of these 'alternative' schools and the graduates they produced in detail. Essentially this parallel education system existed for more than two decades, and produced graduates who occasionally gained places to Universities such as the University of the Witwatersrand, which by the 1980s had begun to admit a small number of Black South African students. Most of these parallel education graduates however were part of the ANC resistance movement and went into exile.

A third educational alternative open to disenfranchised groups, who were able to escape or leave South Africa, was an international education, from secondary through to tertiary level. This was provided by friendly states such as Tanzania, Zambia and also Nigeria and Cuba (who declared itself a frontline state after the Soweto uprising in 1976).¹⁹ There was also the unique establishment of the ANC School in exile set up by ANC members resident in Tanzania, which functioned as an educational institution up until the late 1980s.

2.3 Contemporary Education History The 1990S TO 2007, Post-Jomtien / pre MDG years.

The last decade of the 20th century and the first of the 21st Century has seen considerable change in Education policy. The 1990 UNESCO Jomtien conference aptly titled "The World Conference on Education for All", (Unesco 1990) was to be the touchstone for global universal free primary or basic education for all children. In effect this aspiration was not achieved, and was followed ten years later by the Dakar framework for Action meant to address the aspirations of the Jomtien conference by setting six goals to attain.

In both South Africa and Ghana, by 2007, few of the six goals had been attained, there were more schools and facilities for child care, but access was still limited, primary education was compulsory but was not always affordable by the poorest, the Adult education scheme in South Africa had been initiated but was not accessible to all youths, adult literacy has remained stubbornly low, and gender parity though

¹⁹ See Kallaway:2002, 1984 and 1986

improving, is yet to be established. The improvement of education quality, has also proved elusive, and is the focus of the EdQual Research Programme Consortium.²⁰

Ghana, despite having had a more favourable economic and socio-political climate since the mid 1990s, has lower educational attainment standards than it had in the early 1960s. The country remains in need of adequate educational infrastructure, particularly classrooms in high population urban and semi-urban areas. However most school age children are now enrolled in education, and a significant amount infrastructure, such as classrooms for pre-school children and food stores for school feeding dinner contractors, has been built in the last decade.

South Africa, since self-rule in 1994, and the subsequent 1996 South African Education Act, (South African Government, 1996) has made a considerable investment in basic education. The Nationalist curriculum was scrapped and a new outcomes-based curriculum was put in place, which has subsequently been revised. A number of new schools have also been built in the preceding thirteen years. However, the sheer scale of educational need, especially the specific needs of very rural locations, and those of the over-crowded urban shanty towns and townships, has meant that the new school buildings schemes have not been built fast enough. Research by Create (2008) suggests that although overall primary school enrolment at over 85% for low income countries, this may not account for migrant children who are often unrecorded, also many children are over age for their class. The latent overcrowding these issues cause, contributes to low quality and drop-out and repetition, (Motala, et al. 2007) (Create, 2008).

South Africa's 'post-apartheid' condition has also meant that some older youths who missed out on education during the Nationalist regime, are also enrolled in local schools. Running in parallel with the National education system is the Adult Basic Education and Training policy, (ABET) which seeks to cater for these youths and other adults who have not attained basic education. This is run separately from basic primary and secondary education activities although occasionally, as found during field research at Vukani Primary School, ordinary school facilities might be used in the evenings for ABET teaching needs.

In both countries, other educational resources such as libraries and information or resources centres also exist but are funded and run separately from the State Schools. This has meant that schools operate independently from these other resources, despite there occasionally being duplication of built infrastructure and their associated facilities, including libraries and occasionally health clinic functions, within some communities. There are recorded exceptions to the norm, such as the recently built Inkwenkwezi High School, in the Lower Crossroads Township, near Cape Town, built by the Architects Noero Wolf, the school reaches out in its architecture to its township community, and facilities such as the library, computing facilities, and the main meeting area all designed

²⁰ UNPD annual reports, UNESCO, Education For All (EFA) monitoring report <http://www.unesco.org/en/efareport>

to be used by the township during after school hours. The school also shows exemplary sustainable design features with water recycling and well designed natural lighting for classrooms in place.²¹

Levels of educational attainment, discussed here as a proxy for education quality in both Ghana and South Africa, has been in decline in both countries, as is similar in much of Africa in the past decade. Thus despite the ideals of the Millennium Development Goals, (MDGs), the infrastructure and resources required to deliver a functioning education system remain limited in these countries of increasing child age population growth.

Research from Latin America and South East Asia suggests that in comparison with Africa, education attainment and coverage in these continents has risen in keeping with UNESCO projections.²² Despite increased spending on education in both countries schools have remained overcrowded, with educational attainment low, poor attendance, high drop out rates, and student repetition, and declining in real terms, in the case of South Africa.²³ UNDP, (2010)

2.4 Key Issues for school Design

From the literature reviewed, some key factors that have hindered school building coverage have been:

2.4.1 Planning Standards

For most low-income countries, school planning and design standards currently in use originate directly from the recommendations of planning reports from international bodies, such as UNESCO (Vickery, 1966; Asian Regional Institute for School Building, 1973, UNESCO, 1988). These universal standards continue to provide generic design advice for schools globally. In middle-income countries, there is also a level of involvement from the national level. For example, in South Africa, school planning and design is guided by National School Building 'Norms and Standards' (SA Govt. 2008), that were initially developed by researchers and departments such as the building division of the Council for Scientific and Industrial Research (CSIR). (Calderwood et al, 1965) These guidelines are devolved to Provincial level Planning Departments for use in school planning and construction projects. Such design guidelines however are unable to give location- or context-specific advice to educational planning officials, but instead offer standardised international space standards and generic planning layouts.

Effectively, the planning and design of most schools in low-income countries, involves limited design input or planning at local level. This situation is in direct contrast to other areas in which educational planning and delivery are being enhanced, such as the development of national school curricula, where local and national involvement in educational change and delivery are central to project success.

²¹ A Digest of South African Architecture (South African Institute of Architecture) 2007

²² Unicef Progress for Children (2006)

²³ *ibid*

Prior to 1996, UNESCO's school planning division, produced a number of influential building notes and reports that have formed the basis for international school design standards across low and middle income countries (Vickery, 1966; Almeida 1988,). The divisional headquarters in Bangkok, and Dakar focused on producing a number of these school design guides, which were adopted by National Governments and building consultants involved in the construction and expansion of schools from the mid-1960s to the early 1980s; for example De Spiegeleer, (1988) in Bhutan, and UNESCO (1976) for Somalia.

Insert figure one around here

Fig 1.0

A typical UNESCO-guidelines school classroom Atonsu Primary School, Ghana built. c 1955/60

There are some distinctive features of the generic “UNESCO-standard” classroom. Firstly, classrooms tend to be part of a block of three or four classrooms, planned to be single banked, with an access corridor running the length of the block. Generally also windows are placed on adjacent walls, at the correct height for middle to upper school children, but not ideal for younger pre-school children and those in early years of primary school, particularly if they have smaller classroom furniture. Wooden shutters or, very occasionally, glazing is in use. In rural classrooms however there are often no windows in place. Classroom walls are usually made from cement blocks, and occasionally clay or mud brick. Not all classrooms have fibreboard ceilings, but most have metal roofing sheets, with a few having concrete or fibre reinforced sheets. Floors are typically laid with a cement screed, although in some medium-income countries, like South Africa, schools might have PVC or linoleum floor finishes, and occasionally partial carpeting in pre- and early- primary classrooms.

Classrooms sizes are generally between 35m² and 40m², and planned for a maximum class of circa 35 students. Most are designed as individual rooms, with few having flexible back- or side- walls to allow for double-sized or semi-outdoor classroom areas respectively. The classroom blocks tend to be low, single-storey structures, although there are variations to this in urban areas (Fig. 1). Sanitation facilities are usually built as a separate block, some distance from the classroom. The administration block is occasionally part of a classroom block in smaller schools, or more usually built in the same block as ancillary spaces, for library/ICT and storage facilities.

With the increased involvement of the World Bank, in school funding from the 1980s, came new published guidelines on school design and planning (World Bank, 1988, 1997; White, 2004), focused on improving efficiency and reducing building costs, through the use of local labour and materials for school building. More recently, NGOs and certain

architectural practices have become involved in school design projects across low-income countries. Some have worked with existing guidelines, whilst others have developed their own design expertise (Arup: 2006; Foster, 2008). However, for most pupils in rural or poorer urban areas, schools are still planned and designed to these international standards.

2.4.2 New Schools and Concepts in School Design

There are now a number of contemporary international examples of the re-interpretation of educational space that diverge from the conventional UNESCO-inspired design standards. Since end of World War 2, particularly from the late 1950s in Europe and the West, educationalists have supported the development of child-friendly learning spaces where primary school classrooms have evolved to become more representative of the everyday home environment of the child with workspaces that have shed the Victorian-era formality of the pre-1950s classroom design layout. The promotion of the child-centred learning model in primary education pedagogy, has been one of the international drivers behind transformation of school design (Saint, 1987; Dudek, 2005; Woolner, 2010). This has resulted in the child-scaled design of classroom elements such as windows and learning spaces, which are designed at a more intimate scale. Furthermore the placement of child-sized furniture in groups for collaborative learning,

The most recent driver of school design innovation has been the need to respond to new sustainability in building design and energy consumption criteria. Since the mid-1990s in some high-income countries, such as the United Kingdom, and the USA, all public structures including schools now have to have a sustainability building design audit, to ensure that schools do not contribute to the depletion of local resources in their design and methods of using renewable energy and natural thermal control, reduce dependence on non renewable energy sources.

From the Literature review specific to Ghana and South Africa, and the case study schools visited were the following issues:

2.5.1: Transition

In both countries studied, Ghana and South Africa, the education system was undergoing a significant period of transition. Arguably more so in South Africa, where the dismantling of a four decades old segregated education system, and its replacement with a multi-cultural, universal basic education system, has proved difficult to deliver in the decade following the transition. In urban areas specifically the lure of a democratic South Africa and the perceived hope of employment and better opportunities, as well as the liberal border controls, has made South African cities and their outlying townships magnets for intra-African migration. The educational and other social services and infrastructure needs of this group add to the already high pressure on facilities such as schools in these areas.

In Ghana, whilst the transition had not been as drastic, the state education system had to transform itself from operating within a military-run state, that invested little in educational spending and relied heavily on aid, to become a properly funded educational system existing within a democracy. This transition to a neo-liberal, democratic

government, has brought with it increased spending and focus on basic education provision but also the need for increased scrutiny of spending and accountability.

2.5.2 Local Involvement; resourcing and support:

In both countries, the transition discussed has also involved an implicit change in the relationship of the local community and school users with the school. Since the post World War Two period, in South Africa and Ghana, the majority of all schools became government-provided and owned, with the missionary schools being outright closed, or having their funding severely curtailed. Furthermore unlike the earlier mission school establishments, these government schools had a mono-functional relationship and status in society, as buildings for the sole purpose of providing a formal education within the duration of the legislated teaching day. This meant that there was limited, if any, interaction of the students, parents or other local stakeholders with these schools, outside of the Government designated school teaching hours.

The transition of schools, from being structures that were conceived of, and operated to function in isolation to the community, to becoming organisations that actively seek to involve local community members in the running, resourcing and, in some cases, the funding of the school remains an ongoing challenge. **(South African Government)** Cross (2002), Rose, (2003) Gibberd (2010)²⁴ Even in situations where templates for school stakeholder meetings and the roles and responsibilities of participants had been drawn up. (CSIR Maphala Gulube, (date)²⁵

2.5.3 Situation/Context specific Socio-economic factors

Unsurprisingly, each school is unique in its use and operation to the specificities of the environment, location and socio-economic context within which it is placed. Thus the generic nature of ‘advice’ and guidelines on various aspects of education planning, specifically classroom anthropometrics, environmental design and layout planning can be of limited use for schools in ‘non-standard’ contexts.

The difficulty of providing bespoke educational buildings to meet with student needs has been well handled by the Western Cape Education department in South Africa by the adoption of the delegated contract situation, where key architects were invited to design schools in poorer areas of the Cape, and given only a fixed sum within which to do this, with access to the space standards and norms guidelines drawn up by the Western Cape Education Department.²⁶ As these architects were under no obligation to conform in design style to previous government school design plans, a number of unique, ‘one-off’, schools have been built since 1994 in the Western Cape Region.²⁷

²⁴ Interview with Jeremy Gibberd, 22nd February 2010 discussing Maphala Gulube project (**reference**)

²⁵ **Maphale Gulube** Project Report (ref)

²⁶ Interview with officials of **WCED**, July 1st, 2007

²⁷ **Dalweide School (fig XX)** and Inkwenkwezi Schools both were originally built within this framework.

Both countries, have also have had to work with the private education market that has enabled students from both elite and poor backgrounds to have the choice of enrolment in private sector schools. These schools cover the full spectrum, from unaccredited, makeshift classrooms in domestic accommodation to fully built school campuses, offering and teaching an elite exclusive education and international curricula such as the International Baccalaureate.

This stratification of private education can best be seen in its infrastructure. Basic schools, often operating with no accreditation (**fig 1**) are at the bottom of the rung. At the top of the rung, in contrast are the new private schools, such as the Oprah Winfrey Academy for Girls in Johannesburg (**fig 2**), designed to the taste of its benefactor, with no expenses spared, by a prominent South African architect.²⁸

3.0 Field Research:

This report section documents the field research carried out in 2007 to attempt to establish whether there were links between education quality and school design and planning. The findings suggested that there were the expected links between well-built schools and good educational quality, or its proxy, educational attainment. However these were not as important as building infrastructure issues related to sanitation and health, pre-school feeding programmes. Classroom sizing, design and function within the research were found to be less crucial than the sanitation and school feeding to improving educational quality.

In the preceding part of this report mention has been made of the World Bank, Unesco, DfID and other international institutions, that have produced numerous reports on education and school buildings.²⁹ Amongst the key issues that are highlighted is how best to provide adequate classrooms and other school facilities, most recently this has included infrastructure for ICT provision.

New models for education provision that challenge the traditional school and classroom provision and layout, such as Neville Alexander's "Campus education" thesis, where he advocates groups of schools sharing one campus, have been less documented.³⁰ More recently the South African Research institute, the CSIR has been involved in the re-conceptualisation of schools and school teaching through their promotion of the Orange Farm Maphala Gulube projects.³¹

²⁸ Interview with Jeremy Rose, Johannesburg February 2010. It should be noted that in both countries as elsewhere in the South private schools have always existed. In both Ghana and South Africa elite, fee paying colleges such as St John's, Johannesburg, and the Ghana International School, Accra have operated. In West Africa also a ring of Government (initially colonial-funded, but also funded by later indigenous governments) Colleges also exists including Achimota College, (Accra, Ghana) and Kings College, (Lagos, Nigeria) (Uduku:1992, **Little England on the Veld: Randall, (1982)**)

²⁹ UNDP annual reports, EFA monitoring report, DFID (200

³⁰ Alexander N. et al. **Getting Schools out of the Ghetto**

³¹ Maphala Gulube, and Patel projects, & interview with Jeremy Gibberd, February 2010

Finally there have been the historic Cuban and Latin American *Escuela Nueva* *Escuela Nueva* projects that have provided examples of non-conventional school building models, and community education **processes** that have proved successful.³²

The Escuela Nueva Esperanza in Ecuador, (see box) described by the author (Uduku, 2011b) demonstrates this clearly in its non- conventional, design of a child-friendly school learning space in a rural setting.



Figure 2

Escuela Nueva Ecuador Community learning space, used by children, built of entirely local materials

Source: Anataxu Zabalbeascoa

A radical interpretation of learning has taken place with the emergence of the *nueva escuelas* movement in Latin America. Inheritors of the earlier ‘*conscientization*’ movement schools underpinning mass education programmes in Latin America and elsewhere in the 1960s and 70s, Versions of *Nueva escuelas* exist in India and other low-income countries. *Nueva escuelas* schools make use of existing infrastructure in communities such as houses or church halls (Pineda et al, 2006). The community becomes involved in both supporting and physically accommodating the school as part of its fabric. This adapt and ‘make-do’ approach to learning space remains central to enabling educational access for some of the poorest communities, for whom traditional schools are in short supply and school upkeep costs might be prohibitive.

(the above would be inserted in a box)

The findings observed through visits to schools in the two countries, Ghana and South Africa, are analysed in relation to their design and fitness for purpose. This was to find out whether, from the results of this limited study, conclusions and recommendations can be made about how school design can positively affect education quality, through improved enrolments or educational outcomes.

3.0 RESEARCH METHODOLOGY AND FINDINGS

³² Carnoy (2007) + another

3.1 The Research Conducted

The research took place between June and September 2007, and involved field research, interviews and research documentation in schools in urban and rural locations in Ghana and South Africa with research assistance given by the CSIR, Pretoria and Educational Planning Unit, University of the Witwatersrand in South Africa. In Ghana assistance was given from the School of Architecture and Planning, KNUST, Kumasi, and from the Education Department, University of the Cape Coast.

Criteria for Selection

South Africa and Ghana, the countries pre-selected for research had been chosen using criteria related to their policy changes in education in the past decade. Both countries had educational systems that had been overhauled between 1994 and 2004. In South Africa's case this constituted the total reorganisation of the racially segregated, "Apartheid" education system at the end of Nationalist Government rule in 1994. For Ghana, the reinstitution of democratic elections in the mid 1990s, and liberal economic policies heralding the end of the Structural Adjustment Programme, ensured the liberalisation of education policy and increased Government investment in basic education projects. Both countries thus have had increased investment in schools and significant school building and improvement projects realised between the late 1990s and the first decade of the 21st Century.

The schools to be visited for the research analysis were determined by consultation with Regional and local education boards in each country at city level. The Principal Investigator began communications with co-researchers and Education ministry officials before arrival in each country, however the school choices and the visiting programme were only finalised after face-to-face meetings with the country officials on arrival.

The criteria for selecting the schools took into account the following:

urban rural context,

The project was designed to select an equal number of rural and urban schools to study. Where possible, in consultation with local ministry officials rural and urban schools were identified, that could be accessed and visited over a two day period for the purposes of the survey. Urban schools proved easy to locate, whereas rural schools proved more difficult on account of the time and budget constraints of the project.

neighbourhoods of relative poverty,

For both South Africa and Ghana, the identification of schools in neighbourhoods or communities of relative poverty was relatively straightforward. Schools with feeding programmes were identified as the child health/poverty indicators had already been established by the World Food Programme and their international bodies involved with this. Furthermore in South Africa regional economic indicators are able to classify South African primary schools in locations related to the socio-economic status of their

communities, all schools visited in South Africa were in communities that met with this lowest socio-economic criteria, of need.

and Geographical Spread

In South Africa the spread of schools visited was across the three major South African Provinces, Gauteng, Natal and the Western Cape. This choice was determined by ease of travel and accessibility of contacts, within the time period and financial constraints of the project.

In Ghana, a wider regional spread had been planned; to include the Central region, (centring on Cape Coast) region, the Ashanti Region, and the Northern Region. However eventually a more limited study took place in the Ashanti Region in central Ghana, due to the time constraints of the project.³³

3.3 Methodology

The field research comprised a two-day visit to all schools where recorded interviews took place with a number of stakeholders including students, teachers and parents or others who had regular contact with the school. A number of informal discussions were also had with individuals who lived within the vicinity of the schools visited. All schools were also physically measured, (**image X**) and recorded photographically, (**image y**)

The principal investigator worked with research assistants at each co-investigator's institution; the CSIR Built Environment division in Pretoria, South Africa and the Department of Architecture, at the Kwame Nkrumah University of Science and Technology (KNUST), to set up the visits to the schools.

Prior to school choice, decisions had to be made about how to conduct an essentially 'quick and dirty' survey of a sample of schools in each country. As the results were not going to be statistically significant, given the short research period and limited funding available, there was flexibility in the selection process. In South Africa three regions were chosen, accessibility criteria, knowledge of local architects in the area, and availability of statistics were the key criteria which determined the choices which comprised the following regions; Gauteng, KwaZuluNatal, and the Western Cape.

In Ghana also, final decisions about the regions to be surveyed were made when the lead researcher arrived in Ghana in late August. The regions initially chosen as being most suitable for the limited time and resources available for the field research were the Ashanti and the Central regions. However contacts with the University of Cape Coast were difficult and so the proposed visits to schools in the Central Region did not take place. A presentation session showing the team's research results in South Africa and work in progress in Ghana, did take place with EdQual research colleagues at the

³³ A research team visit was made to the Education Department at the University of Cape Coast to meet with colleagues involved in a separate EdQual project. Some information about schools in the Cape Coast region was sent to us at the end of the research period and therefore were not incorporated into the report.

Institute of Education, University of Cape Coast, on was undertaken on 8th September 2007. (fig A)

3.4 School location and Type,

To enable some kinds of comparisons to be made between schools in the different countries, a number of agreed criteria were defined for school selection these were the following:

3.4.1 Urban / peri urban vs rural schools

All case study schools were categorised as either rural or urban. However within the urban categorisation in the South Africa, township schools are peri urban as although the Case Study township schools visited in Guateng and the Western Cape were in metropolitan regions, the facilities in the townships made the term peri-urban more appropriate. In the South African field survey three urban and three rural schools were visited. In Ghana two urban schools and one rural school were visited.

3.4.2 School Context

This research project has focused on the relationship of school design to school quality. The implicit view taken was that all schools surveyed were providing education for the poorest sections of local society. In South Africa this had been policy defined as schools were awarded “fee free” status if it was felt the local community level of poverty would mean the parents and guardians of enrolled students would be unable to pay the basic level of school fees charged by the government.

Ghanaian schools were not accorded this status, however the government had identified schools for the new pre school-feeding programme that it was running as a national pilot project in 2007.³⁴ The criteria for these pilot schools being; those in areas of highest childhood nutritional need, which does correlate closely with those in areas of high poverty.

School Resources (computers, school feeding, libraries etc)

The schools chosen also were expected to have incorporated within the basic classroom and teaching administrative block design, “value-added” features such as libraries, pre-school facilities, and technology suites. Different combinations of some or all of these facilities were found in all the schools visited.

In all six South African schools visited, all had designated library areas. Two schools Vilikanzi and Mphuthane, however had classroom box boxes, where students could borrow books, instead of using the formal library space which was used as a book store. Vukani Primary school had both book boxes and also a designated library /ICT lab. In Ghana of the three schools visited only one school, had a designated library and this had been donated by alumnae pupils by the school living in The Netherlands.

Pre-School facilities incorporating pre school classes for children aged four to seven years, and a state- or national-government funded school feeding programme, were in

³⁴ This has since been instituted nationally.

place in two of the three Ghanaian schools and in all of the six South African Schools visited.

Technology suites, incorporating student accessible Personal Computers were found in five of the six South African schools visited. In the only school that did not have an operational suite, there had been a computer suite up until the mid 1990s, however the computers that had been donated by an NGO became obsolete and had not been upgraded or replaced. (Table 1)

3.4.3 Practical Accessibility: travel logistics, time and officially granted access:

For both countries the final, and most important, criterion for school choice was the practicality of field research access to the schools within the relatively short, (two week) time frame for each visit. In both countries the aspiration was to capture through the field surveys the kind of schools that the non-élite students in each country were likely to attend and the conditions that existed within these schools.

3.4.4 School Age

Initially it was hoped that all schools surveyed would have been built within the past ten years, so as to reflect the new educational policies that had been put in place. Within the time frame and with the travel constraints in place this proved impossible to achieve. The variation in school age however does bring a further range of typology to the schools researched. This has contributed to the final analyses as it has allowed the project to consider what forms of upgrading older schools required, to improve their viability and responsiveness to pupil and education pedagogy needs in the 21st century.

The tabulated format of schools visited shows the following:

LOCATION	SCHOOL NAME	SCHOOL TYPE	DATE	SCH. FNDG	LIBRARY	Computer Suite
SOUTH AFRICA	Nchunchenko Primary School, Soshanguve <i>b.1994</i>	URBAN Gauteng	16 AUGUST 2007	YES	YES	YES
SOUTH AFRICA	Mphuphuthu Primary School, North West <i>b.Pre:1994 (c. 1966)</i>	RURAL Gauteng	6 AUGUST 2007	YES	YES – BOOK BOX	NO (ROOM EXISTS NO COMPUTERS)
SOUTH AFRICA	Muzi Thusi Primary School, Edendale <i>b.2004</i>	URBAN KZNatal	13 AUG. 2007	YES	YES	YES
SOUTH AFRICA	Dr Vilakanzi Primary School, Groutville <i>b.2004</i>	RURAL KZNatal	14.AUG. 2007	YES*	YES*	YES
SOUTH AFRICA	Vukani School, Philippi Crossroads <i>b. 1998</i>	URBAN W.Cape	31 JULY 2007	YES	YES	YES

SOUTH AFRICA	DALWEIDE Primary School, Paarl b.1996	RURAL W. Cape	1 AUGUST 2007	YES	YES	YES
GHANA	Atonsua Primary School c.1960s (+2007sfp bldg)	URBAN Kumasi	11 Sept 2007	YES	YES	NO
GHANA	R.C. Pri. Sch. Kuntanasec.1960s (+2007sfp bldg)	RURAL Kumasi	12 Sept 2007	YES	NO	NO
GHANA	Dompoase Primary School c. 1970s/80s	URBAN Kumasi	4 SEPT. 2007	YES	NO	NO

TABLE 1: SCHOOLS IN GHANA AND SOUTH AFRICA SURVEYED FOR THE EDQUAL STANDALONE PROJECT

Schools in Ghana were generally older, and had fewer resources than their counterparts in South Africa, and the sample size, for reasons given earlier was much smaller. South African schools had generally been built within the past ten years. The few older schools had had new buildings or infrastructure added to accommodate the pre school intake and occasionally ICT /computer classroom infrastructure.

Field survey research methods:

In each case study school a scheme of research was employed, which used both qualitative and quantitative methods for information gathering, this comprised the following:

Interviews

These comprised a range of structured interviews with the Principal, staff, students and parent groups in each school visited. A further set of interviews took place with members of the school planning divisions of the ministries of Education in Kumasi, Ghana and the Western Cape in South Africa. Research Colleagues also were in touch with the Ministries of education in Natal, and Gauteng, in South Africa. In Ghana an extended, one hour interview was had with the director of Architectural and Engineering Services Ltd, (AESL) which was involved in the design and provision of Ghanaian state primary schools.

The onsite interviews in schools took place for the duration of a morning, each running for approximately 40 minutes, but occasionally up to an hour. Respondents were given time to expand on their views in relation to after hours school use and the sharing of school facilities by the community. An interview transcript is included in the appendix to the report.

Observation:

A day in the life of each school was observed and recorded via digital photography. The aim of this was to find out how children and teachers used their schools, specifically classroom use, but also what spaces and places of interaction existed within the school

environment. It also sought to visually record the architecture; construction, materials and planning of the schools.

(image one)

Measurement and Data Gathering

A set of typical classroom(s) and other teaching areas in each school visited was surveyed, this involved research colleagues measuring classroom dimensions and transcribing those into the plans shown below. From these measurements the similar average classrooms sizes were able to be deduced across schools visited in both countries. This similarity relates to the standardised international classroom dimensions followed by both countries. **(reference)**

(Image two)

Data on class sizes at each school over a five to ten-year period, where available, was also collected. This proved difficult to collect, as for many schools this data did not exist, or was not recorded in a format which allowed comparative analysis. The aim of collecting this data was to find out whether a correlation could be established between well-designed schools and the effect of school feeding programmes in boosting educational performance through class cohort pass rates. The small sample of schools surveyed and the paucity of data collected has meant that this correlation could not be established. However published data suggests that school feeding programmes have had a positive effect on class retention rates in early years education. (Kristjanssen, et al, (2009), Ahmed et al (2007), Reynolds (2009), although not without differential viewpoints, see for example Tomlinson (2007)

(Graph 1)

Findings

With the information collected from the schools surveyed and also from interviews with key contacts in education and planning ministries at regional level in each country. A summary of the findings from the schools visited is included below:

Atonsu Primary School , Kumasi, Ghana (figs 1 & 2)

This school was established in the 1960s, as a primary and technical college. There was a range of buildings on the school premises in poor condition, built at different periods. The pre school classroom block had been newly built and included a small store area for the storage of utensils and dishes etc for food distribution.

Fitness for purpose

The classroom block and adjoining storage facility were purpose-built for the pre-school education and feeding programme. The classrooms doubled as feeding areas for the pupils, and all food was cooked 'off site', only being brought to the classrooms during the feeding period, between 10 and 11am.

Improved educational quality

The programme had just begun, and therefore there were no records of enrolment and no trends could be identified. However the interview with the headmistress on the 13th September, 2007, confirmed that all three pre-primary school classes were fully enrolled.

Greater local usage

There is some potential to use the pre school facilities further. However the entire primary school, except the pre-primary block operates a double shift system, so there is intensity of use. Outside of school hours however the school is closed, and it is in a rather downtown area so without adequate staffing it would be unable to be open to the public and run unsupervised.

RC Primary School, Kotonashie, Ghana (fig 3)

This school is an example of a 'partnership' project between the Ghana education authorities and the Roman Catholic Church. The school was initially funded and built by the Roman Catholic Diocese of Koto. However it now receives funding and teaching support from the government. New buildings are being added to the existing infrastructure to allow for the introduction of pre-school classes and the feeding programmes. Currently there is a pilot programme in place, with funding also from the World Food Programme.

Fitness for Purpose

There is a new classroom block being built which will add three new classrooms to the existing school blocks. In the meantime the existing old buildings were being adapted for use by various age groups. There were no facilities for the 'on site' preparation of meals. The site also has limited space for future expansion.

Improved Education Quality

This had improved in the sense that there has been increased enrolment, since pre-school feeding programmes had begun, and the principal said he had had more inquiries from parents about enrolment. Reverse situation where some students from city are sent to 'rural' areas for better education.

Future Outreach

Need to forge better links with the church, who could be more involved in both outreach and support teaching.

Case Study Vilikanzi. (visited 14th August 2007)

This school is located in a rural area of KwaZuluNatal province. Near the hometown of the ANC leader [Albert Luthuli]. It was built in 2004. It had a pre school feeding programme which operated well and was supported well by the Provincial government.

Fitness for purpose:

As a newly built school, its infrastructure was in relatively good condition. It however did not have a school hall, and the infrastructure for the school feeding programme was

limited. Food was prepared offsite and the pre-school classrooms doubled up as eating areas for the children.

Community Activity

As at 2007 there were no outside activities taking place within the school, except the school farm project which employed local residents and especially parents and guardians of students. The school also lacked a school hall which it was felt would have been a good generator of local income. However local NGOS were able to use the feeding facility structure in the school to bring in food after the school day to have an established feeding for needy students after school **(fig 4)**

Future Activity:

More links with the local community would be enhanced with both the opening up of existing infrastructure out of school hours and also with the construction of more community focused facilities such as possibly a cafeteria area where the free school meals and other meals could be provided for hygienically 'on site' with proper eating facilities. For adult basic education the addition of an information suite/library would also be invaluable. This is particularly true in KwaZulu Natal, where the incidence of HIV/AIDS meant that at the school more than 50% of the children were either infected or had members of their family infected and were effectively being cared for by older or younger heads of family, who were on limited incomes.

Case Study Vukani

Vukani School, Lower Crossroads (visited 31st July /1st August 2007) **(fig 5)**

Built in 1998, this school is located within the Crossroads shantytown area of Cape Town, the neighbourhood in which it is located is particularly deprived. The school does have a few outreach functions and a well-established pre-school feeding programme.

Fitness for Purpose

This school is relatively new in construction and has a purpose-built kitchen, and child centred early years / pre-school classrooms. Food is still prepared mainly offsite although there are cooking facilities in the kitchen area of the school. Eating however takes place within the classrooms.

Community Activities

Adult basic education does take place within the school. There is the school farm. There is talk of allowing the public to use the library and computer facilities.

Future Development

Technical /vocational education skills from outside the school could be incorporated into adult and vocational education. More use of library and computing facilities. Double-shift

schooling and more integration with secondary school next door. School meals becoming more integrated into local community etc.

Nchuchenko School

This school is a peri-urban school located in a township on the outskirts of Pretoria in Guateng. It was built since the repeal of Apartheid in the 1990s, to the school design standards of the Guateng region.

Fitness for purpose

The school has been designed to deliver education to the migrant community where it is located. There was a shortage of space for the early primary classrooms, and one class was accommodated in a steel clad shelter. (Image) The school did have an early years feeding programme and a fully functioning computing/ICT suite

Community Activities

Few community activities took place at the school. The school was closed after-teaching hours and during the vacation..

Future Development

Computing facilities could, with planning, be shared with the local community. Also the facilities such as potable water, and electricity could be shared with poorer residents in the surrounding neighbourhood

Mphutlane

This school was built in the late 1960s, in what had been a “bantustan” or designated African homeland during the Nationalist government era (1948 – 92) in South Africa. The design and layout of the schools conforms to the original Department of Education and Training (DET) school design standards and norms.

Fitness for purpose

As this school is in a rural location, the classroom space and facilities are adequate for the student population. The school has also been adapted to allow for wheelchair access.

Community Activities

The school is used for health and aids awareness outreach activities. The community can rent classrooms for religious activities at the weekend.

Future Development

With access to ICT facilities and the construction of more multipurpose spaces for school meetings and feeding programmes, the schools facilities could be opened up further to the local neighbourhood.

Dompoase School

Dompase school was built in the peri-urban outskirts of Kumasi town. It is a recent school, built in the last ten years. It has a number of classroom blocks and a separate ventilated pit toilet block for children.

Fitness for purpose

The school has basic classrooms, a principals' office and a central area which acted as an open air hall meeting area, and somewhere for children to play out of hours (see image)

Community Activities

The school was used for church services and meetings at weekends, and local children played in the grounds.

Future Development

With access to more facilities such as a stable electricity supply and Ethernet/wifi installed, the school could be used much more by its local community

Musi Thusi (sound transcript exists)

Designed by a South African architect, returned from exile, after 1994, the building is laid out in traditional school style. However there are informal external teaching areas, and community spaces. Also a hydroponic water system had been planned and the school has an extensive school farm on account of its semi rural location.

Fitness for purpose

Classrooms are well designed and most have flexible walls to enable rooms increase in size with large class attendance. Children and the community used the outdoor classroom seating areas, as recorded in the photographic images. Sanitation and ICT facilities were however limited.

Community Activities

The community was involved in the farming / agricultural extension programme, which had found international support from an American University. The community also could hire rooms for after school use.

Future Development

With better sanitation and access to ICT the school could be used more for after school activities.

Dalweide Primary School

Dalweide primary school is located in the rural Paarl agricultural region of the Western Cape. It was built as a new school post 1994, by the local architect, (XXX) using the novel formula for school design funding set up by the Province whereby architects were allowed to design schools to their own brief using a fixed sum for construction. The design was subsequently rebuilt for the Vukani primary school in Crossroads Cape town also visited as part of the survey.

Fitness for purpose

Designed and planned as a purpose-built primary school for a small rural community, this original design has worked well as an addition to the community. Its design expressed the visual form of the Paarl Hills, the location of the school.

Community Activities

The community used the school hall for after school meetings and also was involved in after school computing lessons.

Future Development

The principal had raised funds to buy a bus for the school and it was already involved in sports development activities in the Region. He was hoping to raise further funds for playground facilities for the children. There is the chance for the further development of after school educational opportunities for the community using the school facilities.

Field Visit Findings

A number of common field finding themes were identified. Key amongst these were the following:

Classroom Overcrowding

The enrolment numbers of students, particularly in urban school settings meant that of the ten case study classrooms viewed, and further five visited, twelve were overcrowded. Despite viewing two schools, one in Ghana (Atonsus), and one in South Africa (Mphuphute), which had been designed to have double sized classrooms, Atonsus School and a further six case study classrooms viewed, showed signs of overcrowding.³⁵ The current standardised classroom layouts were unable to cope with the class enrolment sizes. In a classroom in Ghana (Dompoase School), a school class size of ninety students was counted (**image**)

In an interview with teachers at a school in the Western Cape, the following comment was recorded:

“...when class numbers exceed forty, one is not teaching one is using crowd control...”

Classroom overcrowding was particularly serious in Vukani Primary School Cape Town, and Atonsus School, Kumasi. Both schools had well over 50 pupils in most primary classrooms. In contrast R. C. Kuntunase School, (rural Kumasi) and Mphuphute School, (rural Gauteng) had optimal class sizes, (between 25 and 30 children per class).

³⁵ The case study schools of I. Vilikanzi (South Africa) and Kuntunase (Ghana) were less crowded, with on average 35-40 pupils per class. Both are in rural areas.

In Ghana, the Atonsua School, still operated a 'platoon' or double shift system, this was being actively discouraged by the Education ministry at local government and national level, however both shifts at the school had full classroom sizes.

School Sanitation,

The provision of working, toilets, either V.I.P or flushing water closet, for schools was particularly problematic. In both countries most schools visited had access to water supplies, but the actual provision of the sanitation requirements, for WC's and drinking water provision within the playground for schoolchildren was poor, and sometimes appalling.

Some schools had V.I.P. latrines, that were poorly maintained. The majority had installed conventional 'flush down' water closet facilities, which had a number of serious problems. Firstly the regularity of flow of pipeborne water to the school premises was limited, which meant many W.C.s visited were unhygienic and had been unflushed for a considerable time period. Secondly, even when there was adequately provided pipeborne water, in some schools it seemed children struggled to use the w.c.'s appropriately. There was a high incidence of broken w.c. pans, and the w.c. cubicles and wash up areas were often defaced.

Similarly potable water for children to drink at break times and for hand washing before pre-school meals was also in short supply. A few good examples existed of robust water stands where children could and did get drinking water from in the playground (example of **Nchuchenko**), unfortunately more examples of damaged standpipes, and the use of water bowls for classes of children to handwash was commonplace (**Dr. I Vilkanzi and all other schools visited in in South Africa for example**).

School Feeding Programmes:

A positive development amongst a number of schools visited was the establishment of school feeding programmes. In both Ghana and South Africa there have been education and child health policies that have been developed in parallel to promote child development and welfare. Each country now has a pre school feeding programme in place, which essentially provides free school meals for pre-school to early primary age children, who are enrolled in primary schools. (Uduku:2010)

Primary school enrolments in both countries have shown a gradual increase between 1987 and 2007. Furthermore in schools with feeding programmes in place this increase in enrolment has been pronounced and sustained. This was evidenced by recorded reductions in student drop-out rates in recent years corresponding to the implementation of the school feeding programmes and also with interviews had with School Principals. (**image/ &interview with Principal, Kuntunase School, Ghana**)

School Farms

Connected, but independent from the school feeding programmes, has been the successful initiation and implementation of the 'School Farms' projects, in most South African Schools. This has been a South African national government policy that has been

implemented region wide in primary schools. It involves each Primary school designating a portion of its land to be used for farming. The farms are apportioned into plots that parents and guardians of school pupils can apply to cultivate. The produce of the land is sold to the school for use in school feeding programmes, whilst any surplus produce is for the use of the family that has cultivated the plot.

Of the six South African schools visited, two school farms, (Mphutlane, and I. Vilikanzi) farms have had input from international agricultural support specialists, and were able to produce high yield crops through the use of appropriate sprinkler mechanisms, (**Musi Thusi image**), or hydroponic systems – sometimes with limited success and backup (**I.Vilikanzi image + audio interview link Vilikanzi school**). Given the high rate of childhood poverty and the incidence of child-headed families as a result of the HIV-AIDS pandemic in Southern Africa this ‘virtuous circle’ of nutritional support;

-pre-school meals – school farm plots – home grown food- school/part farmer-owned-

This in effect offers a lifeline for many families and communities, who are in poverty, as well as improving child nutrition and retention rates at school. (**audio-link interview with principal Vilikanzi**)

ICT and other Resources

The greatest divide in facilities provision was in the provision of IT resources in schools in each country. South Africa had benefited from a long history of support from NGOs and corporate bodies such as IBM during the pre 1994 period. This has meant that ICT facilities and teaching support had already been established in some schools for over a decade. However often the provision of fixed desktop computers was outdated, and support for their upgrading was limited.

Furthermore, because they were expensive and difficult to support, ICT classes and use was restricted to short periods for older students during the school day. Virtually no school based ICT facilities were open during after school hours to the public.³⁶ Also at Mphuphute Primary school an entire computer lab was found bare and devoid of any equipment as the former sponsor of the “computer lab” no longer provided this support and sponsorship, thus the machines became obsolete and had been removed, and the school hadn’t the funds to invest in new computers or maintain the lab building which was now disused and falling into disrepair. (**image + audio link**)

At Vukani Primary School, as part of the field study the researchers were able to conduct an informal walk around the non-regulated housing abutting the school site, and converse with the residents. This revealed the presence of a telephone repair kiosk. When questioned the proprietor was found to be a migrant from Western Nigeria, who lived in

³⁶ The exception to this was Vukani Primary School, that had Adult Basic Education (ABET) classes on its premises after school hours and made use of the computing facilities.

George but had negotiated the rental on the kiosk in the Vukani residential area. He had no contact with the school. He said he would be interested in evening courses, and also he was willing to take on an apprentice to work with him in his repairwork. Currently there were no channels for this to take place. (image)

In Ghana, none of the schools visited had student access to ICT facilities or training. A few had computers in the head teachers' offices. By contrast, private schools in Ghana advertised computer training and ICT facilities as being a key part of the learning experience a private education could offer children (Aiyekoo, 2007) Ghana has now however signed up to the one laptop per child project, (OLPC:2009). This is a government-NGO supported project that aims to give students to cheap laptop computers that they can use in school and take home for learning and to increase computing access to hard to reach rural areas. This might make a difference to ICT access across the country, as the mobile device is literally in the pupils' and community hands to use for learning and other developmental uses.

Education Performance:

This project focused on surveying schools to understand how the planning and design of the school and classroom spaces had affected educational performance. Being more a qualitative than a quantitative analysis, less emphasis was placed on specific measurements or statistics.

However the field research did find that, in both Ghana and South Africa, there was an overall increase in the enrolment of children into school at pre-school entry level, where children were also registered for pre-school feeding schemes. The "fee free" status schools in South Africa were in high demand by parents and the community, particularly those with facilities such as ICT labs, access to sports facilities, (often shared with more exclusive schools), etc. Finally and most importantly all schools in both countries showed good retention and progression rates amongst pupils who had been part of the pre-school feeding programmes.

SECTION FIVE Analysis (Issues, recommendations, conclusions)

The Issues

From the field study research and its findings the key design issues identified as having an influence on a student's experience of education were:

- Overcrowding
- Sanitation
- Free school feeding programmes
- Access to ICT and other extra-(basic) curriculum facilities
 - both during and outside of school hours
- **Community Involvement**

This study has focused on student experience, as a way to appreciate education quality from school design. There is no direct literature on school design and its influence on

education quality, however the field research data collected gives evidence about how school design can affect educational experience, through the following:

- 1. Increased attendance & reduced drop-out rates of class cohorts**
- 2. Better school academic performance and**
- 3. More identifiable links between schools and their local community**

Considering each of these key issues, a set of conclusions based on the key themes identified follows:

Overcrowding:

All schools visited including the rural schools had on average more than 45 students per class, with class rolls of over seventy at both Vukani Primary in South Africa and Atonsu Primary in Ghana. Both Ghanaian and South African schools rely on standards and norms of space allocation per child as a basis for school planning.

In South Africa the space standards and norms have, in the Western Cape, and Kwa Zulu Natal, had a more liberal interpretation as Architects have explored design further than the adherence strictly to the norms, in new schools such as the Mphala Gulube Schools programmes in KwaZulu Natal and the “one-off” schools designed by the architects Jo Noero, Viljoen (Vukani) and others in the Western Cape.

In Ghana, there has been less exploration or adaptation of current school design responses to meet with current educational needs. AESL the government-run design agency involved in state school design and planning relies fully on the Unesco standards and norms in its school planning. Discussed earlier in the literature review, the standards assume a classroom size of 35 – 40 at the most, and make no provision for the different needs of junior to senior primary pupils. . Overcrowding in Kumasi schools, was a particular issue at the Atonsu Primary School. This was a school that operated an afternoon shift (or platoon) system to cope with the student demand.

The field survey findings from Ghanaian and South African schools surveyed suggested the following issues related to overcrowding should be explored in detail:

- Larger classroom sizes
- Different methods of teaching – challenge current format
- Develop shift system further

Classroom Sizes

The design of larger-sized classrooms, that have both more flexibility in their design and use was the key issue that could be implemented to address overcrowded classrooms. Both Atonsu and **Mphuptlane** Primary schools, in Kumasi and Gauteng respectively, had classrooms that had been designed in the 1960s and 70s with this design flexibility. Current classroom design standards base their space standards on the Unesco 35 student classroom standard. 50 students per class is more realistic, however even this is still optimistic for many urban primary schools where class sizes can exceed 80.

Classroom standards specifying space for 50 students per class with the flexibility of design allowing it to be converted into a 100-seater hall for group teaching is a pragmatic response to the overcrowding found in most schools. International examples of flexible classroom design include case study schools such as Kingsmead Primary school in the UK, part of the Building Schools for the Future Programme, the Druk White Lotus School, in Ladakh India, and the multipurpose learning space designed for the Escuela Nueva Esperanza School in Ecuador (See Uduku, [2011])

The concept of an indoor outdoor learning area as used in Kingsmead primary school is workable within both South African and Ghanaian schools where the weather is more amenable to outdoor teaching for the majority of the school day (except during the Ghanaian rainy season, or ‘winter’ in parts of South Africa) than it is in the United Kingdom.

The Nueva Esperanza school model could work well as a design concept idea for schools in rural areas, that could operate in a large multipurpose space, designed from locally available material, thus reducing the building costs associated with designing the conventional school block to the Unesco 3 classroom bay standards discussed. (fig 1)

Sanitation

Schools are also in both countries in the front line in relation to health issues, in South Africa the impact of Aids can be felt at school level as many pupils were aids orphans and looked after by their extended families. Pupils in Ghana have to deal with incipient health problems related to malaria and other tropical diseases that affect pupils and school attendance.

- Robust sanitation where water is available (flush down toilets)
- Adoption of hand wash ‘low-tech’ solutions from Kenya etc (hand washing)
- Hygiene approach like school farms (workshops more community sharing /awareness)

The key themes mentioned above which needed improvement were the unrestricted access to pipe-borne water in areas that had adequate water supply. All the South African schools visited had access to pipe borne water, however the supply of water to taps and WC’s was not always regular. Furthermore the hardware used for WC’s – vitreous enamel cisterns, domestic taps and spigots for water consumption, could not withstand regular and rough use by pupils.

In the first instance water storage systems such as polypropylene tanks would enable water storage for schools with access to pipe-borne water. Secondly the use of self-sluicing water cisterns using materials such as stainless steel would reduce the incidences of vandalism and breakage found in many school toilets.³⁷

³⁷ Information on this system was based on interview had with chief architect & planner, AESL Ltd Ghana **Date**

Hardwearing water taps such as those found at Nchuchenko school, (**image**) in Gauteng also are more robust and able to cope with increased student numbers. A ‘low-tech’ solution for handwashing is the water bottle hand wash device used in Kenyan schools.

³⁸The system centres on the use of drinking water bottles with a closable neck that dispenses adequate quantities of water for handwashing to children in school environments. The CSIR in South Africa has developed a specific South African version of the handwashing device for commercial international use that is already being used in some South African Schools. (CSIR, (2006), SAIN, (2010).

The introduction, use, and proper maintenance of VIP latrine systems would also help with school sanitation. In the case study schools visited, all of the six South African Schools visited had flush WCs. In one rural school (Mphutlane) water was brought in by tanker to service the WCs and provide drinking water for the children. In the three Ghanaian schools visited, two had VIP latrines that were poorly maintained. The third, (Atonsua School) had an outdoor squat WC block attached to a septic tank, on the two visits to the school there was no pipeborne water available on the school site and the WCs were not being used by students. Students used nearby wasteland as an open air toilet facility. The introduction of rainwater collection systems attached to storage tanks would help ameliorate the situation in Ghana, and in other emerging countries in tropical regions with a significant rainy season.

Finally, involving the local community around the school more in sanitation issues via both outreach public health events, and parent information newsletters sent via students, would help engage children in deprived areas with a better understanding of the use and need for good sanitation and hygiene via the proper use of WCs, and hand washing apparatus. More local involvement and interest could also be championed by allowing local access to school water resources, assuming schools had water storage tanks, or boreholes allowing surplus water to go to local communities.

Pre-School Feeding

Both countries now have in place education policies that, have both pre-primary education and school feeding programmes incorporated into the primary school educational provision remit. These programmes have had direct implications for primary school design and construction. Customised spaces for school feeding are required, and also more classroom space is needed to accommodate the pre primary classes within the traditional primary school design layout.

The key issue to be tackled is the provision of more space and incorporation of these new policies within the concept of the traditional primary school. The new-build South African schools visited; Vukani, Nchuchenko, and I. Vilikanzi did have storage facilities built but all had limited eating areas. The only successfully case study school visited was

³⁸ See Ayalo et al. (2007), *Diarrhea Prevention in an Kenyan school...* I am also indebted to Jeremy Gibberd for information about the scheme.

Musi Thusi school in KwaZulu Natal, which had a dedicated eating /recreation area that had been designed for use (**image**) for pre feeding activities.

The incorporation of the Musi Thusi school layout as standard practice, to be altered to the specific geographical location and population needs of each community could be an a good school design exemplar, that if sensibly modified could improve the school feeding experience for pupils in other schools. Furthermore, adopting the school farm policy incorporated in South African schools, that actively encourages the involvement parents and community members in school farming projects would enhance links with the community and help improve local feeding. This could be further developed to be a link towards community farming and nutrition programmes co-ordinated via schools.

ICT, Libraries and Other Learning facilities

School planning and design in both countries needs to accommodate the limitations of infrastructure provision, particularly in remote and peri-urban communities.

All schools surveyed in the field in both countries, either had no ICT, libraries or extended learning facilities, or had limited provision and access to them. Vukani school in the Western Cape had the best provision, of both an ICT computer lab which also functioned as a library space, but this was overcrowded during the school day and not accessible by students after school hours. Within the EdQual project, the findings from research into ICT provision in schools in Rwanda, Were et al (2009) and Rugabiza, et al, 2011) support this, and highlight also that access is further differentiated by gender and location. Boys being more likely to have access to computing training than girls. Furthermore rural schools are less likely to have proper provision of adequate computing infrastructure and access to it, due to the scarcity of energy and equipment penetration in rural areas.

As the field survey and other data has shown, most students study in overcrowded classrooms. This means spaces and places where students are able to self-learn, work on homework, or personal educational development are crucial.

It is strongly recommended that school space and layout designs for libraries and ICT labs need to be flexible enough to enable students and community members make use of the spaces and facilities provided outwith the school day. Examples exist of multi use school design that allows certain spaces such as libraries to be open to the public during non-school hours. (See Inkwekwenzi school, Cape Town image) + CSIR layout)

Furthermore with the rapid development of ICT, the provision of fixed desk top computers to schools rapidly becomes obsolete. The field survey results at Mphutlane School are evidence of this. Furthermore, whilst none of the Ghanaian schools had desktop computing laboratories, most older pupils had access to some form of ICT, usually via the ubiquitous nature of mobile phone usage, as in other low income countries across Africa. (Farrell, G. and Isaacs, S. (2007)

More recent research suggests that the Traxler, and Leach (2006a) paper was right, in highlighting that fixed access to computing would achieve limited benefits. This corroborates Rugabiza et al's (2009) research in the EdQual programme, in its scepticism about the success of large investments in ICT infrastructure in Rwandan schools. It also supports the paper by Kukulska-Hulme, & Traxler's (2006), which discusses ways of providing wireless internet technology in schools.

The main suggestion is that ICT rooms should rely more on providing internet network access to mobile communications such as laptops and smartphones which are envisaged will become cheaper and more available for most learners.³⁹ Currently South Africa has the highest level of internet penetration in sub-saharan Africa, but networks in West and East Africa are rapidly expanding. (Farrell and Isaacs, 2007)

In connection with this also, the development of digital texts should enable schools have better access to digital material online, much of which maybe available on personal laptops, via the one laptop per child initiative or cheaper versions of the already available personal tablets smartphones,⁴⁰ which can access networks freely and quickly at such learning spaces.

The focus thus should be on the design of spaces that enable learners download and use internet access via personalised internet devices as opposed to the provision of equipped computer labs and specialist libraries.

These spaces should also allow for traditional library, or 'quiet room' space activities that would enable eager learners to have spaces outwith the classroom to do homework and achieve directed 'self-learning' tasks, with the use of internet access and physical access to books. A study by the CSIR has calculated that modelling school design which allows the design of 'education spaces' to allow students more time for self-learning and conversely limiting the construction of traditional classrooms, could be a more effective way of infrastructure investment for schooling and improving the student learning experience. (Patel, 2006)

Community Involvement 'Ownership' and 'Participation'

In the field visits there was clearly identified community involvement in some form in all the case study schools. The schools that had significant community involvement, through active Parent Teacher associations, and links with the school farms or feeding programmes, (namely Musi Thusi, Vilikanzi and Nchuchenko) could not be deduced to have better student results. However in the interviews conducted, parent satisfaction in these schools was higher, and parents were more involved in the school during the school day.

³⁹ The One Laptop per child (OLPC) scheme for example already has projects in Ghana (web address)

⁴⁰ Such as the commercially available Apple ipad, Dell Streak, or Samsung Galaxy

In the case of Kuntunase school, the Catholic church and local community were particularly involved with the construction and running of the school, which had been built on church land. The Catholic Church remained involved in the day to day running of the school and part funded its construction and the extension work being carried out during the visit. The levels of community involvement would correspond with the literature and education policy suggesting that successful schools did achieve successful shared community ownership and involvement in their administration and running.

(from paragraph above)

Conclusions ,Recommendations and Implications for Further Research

The issues identified and analysis undertaken, has been condensed into guidelines for school design focused at headteachers and local government education planning departments. Policy recommendations for school design have also been drawn up separately. Both documents are included as appendices to this report.

This report has sought to give a comprehensive account of field research carried out in South Africa and Ghana between July and September 2007. The information given is supported by both the final policy and design guidelines for schools, and also summary files from schools visited, incorporating sets of photographs, drawn plans and audio transcripts of interviews carried out in the course of the research.

The key themes that the report highlights in school design have been focused on have related to how best the architecture of the school space could improve the student experience of the learning environment. Educational quality could not be measured directly. However schools that were more successful in student retention and the provision of a built infrastructure that actively supported student well-being and learning have been highlighted as being the best examples of infrastructure which promotes improved education experiences for children.

In the field research child health was inextricably linked with school attendance and educational cohort retention in higher years, thus both sanitation and school feeding programmes, which took place within the school day were crucial to supporting children's experience and improved academic performance in education. The recommendations made to ensure sanitation was improved and school feeding was properly supported, focus both on the practical requirements and also importantly on the need for holistic community involvement in their delivery.

School overcrowding issues and the lack of ICT/library self-learning facilities were also highlighted as directly affecting childhood learning. As all schools visited during the field survey, confirm with the literature which suggests that most urban and peri-urban schools are overcrowded.

The suggestion that larger classroom sizes become the standard or norm for schools and with this the development of more effective forms of large group teaching, challenges current education planning policy conventions, but seeks to address pragmatically key

issues which bedevil the learning experience for students in overcrowded schools. The suggestion of the re-introduction or development of shift schooling also is a pragmatic response to the unfulfilled demand for school places, particularly in urban areas. This is further compounded by the socio economic pressures, which mean children from deprived families often have to ‘work’ to supplement family survival in cities, during the same daytime period that they would have had access to free basic education.

Similarly rethinking ICT and library provision, to be more ‘support-space oriented’ and less about ‘support equipment’, [comprising textbooks, desk computers, etc] oriented also challenges conventional provision in its focus on facilitated spaces for individual use and not on teaching.

The field research project and findings have been successful in both identifying issues and also identifying schools with best practice examples that have been highlighted within the report. The cross-country analysis that the report has incorporated within its findings has also been integral to the sharing of ideas and a shared knowledge base on school design as an end-product of the project.

The identification of international best practice in School design and the consideration of what ideas and practices might best be adopted in different situations and local contexts, has been a particularly successful outcome of the project.

The highlighting of the need to support community participation, involvement and ownership of schools, from planning through to use and maintenance is a key message of this report. An equally important message for planners and headteachers is that there is the need to focus as much on the support and social welfare needs for children, such as school meals, and sanitation within schools, and not solely on classrooms and teaching equipment needs.

This project set out to survey school design issues in Ghana and South Africa, with a limited time and funding remit, and from this to respond to the research question, does school design influence education quality? The qualitative research methodology employed in the time frame of the research identified the themes explored which most influenced school attendance and child retention within the education systems in each country.

No direct link was identified between school design and improved education quality, from the field research carried out, although as mentioned there was evidence to suggest that children were more likely to stay on in primary education when there was provision of school meals within the school day. Furthermore good sanitation in schools does improve child health and consequently school attendance.

The wider hypotheses that the project set out to examine,

“...there are development benefits in local community use and involvement with schools, and also in the integration of social services with schools, benefits ...”

has been supported from the examples of good practice found in field surveys of schools such as the Mphala Gulube, Musi Thusi school, in KwaZulu Natal, South Africa and parts of the Vukani School in Crossroads, Western Cape, South Africa. These examples fit within examples of best practice internationally in schools in countries as diverse as India, Colombia and Kenya. The exemplar “Surestart” projects in the UK further confirmed this trend.

The recommendations made in the attached executive summary draw from these conclusions.

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Ola Uduku
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Dalweide, Vukani, and Inkwenkwezi, Western Cape
In Guateng

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Gauteng Planning Office
KwaZulu Natal Planning Offices, via Mr. C. Criticos

In Ghana

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and officials

Planning Director EDSEL Services Ltd
Planning office Ministry of Education Secretariat, Kumasi

School Design Handbook

Introduction

This is a brief design guide and handbook for educators and communities involved in school management and new school design.

Educators and community leaders are invited to use this as a guide and checklist of issues that should be considered in the management of existing schools and the planning and design of new educational buildings.

It is a general guide, and the suggestions here will need to be modified to respond to the specific needs of different communities in different parts of Africa.

In Africa, schools are one of the most recognised generic building types. They are a welcome addition to their local communities and should be a resource for all to use. Thus they deserve the attention to design and planning that this guide provides to serve this ambition.

Part One

Key School Requirements

All schools have a key fundamental requirement:

- to cater for the educational needs of their main users

The main buildings in all schools therefore are the classrooms

Classrooms

Where possible there should be adequate space in classrooms for the class(es) being taught within the local prescribed routine or schedule.

Flexibility of Classroom Size

In communities where school enrolment is high, classrooms should be built to adapt to large student numbers.

Design Suggestion

Flexible classrooms, that can be increased in area by the use of sliding doors or partitions can be planned and designed for prior to school construction.

In existing schools it may be possible to take down non-load bearing walls to allow for larger classrooms.

For school expansion new classrooms should be designed and built with the flexibility to accommodate larger student numbers.

(flexible classroom accommodation in South Africa and Ghana)



Classroom Furniture

The design and use, where possible, of flexible classroom furniture which can be stacked up and stored when not in use, is important.

Firstly, it frees up classroom space for different activities, especially in younger aged classroom groups.

Secondly, it means classrooms can be rearranged and used for either different education functions, or can be more easily hired out to community groups who might have their own space arrangements (ie for religious meetings) during out of hours periods

(image two)



Classroom Storage

In connection with classroom furniture design, storage for children's clothing, and bags becomes important when there is limited space. In our research, we explored designing 'underseat' storage for school bags and other student effects, as a way to provide this.

(image three)



Adequate storage space for teachers' equipment is also important, especially at junior primary school level. Secure, lockable storage areas between classrooms or alternatively large classroom cupboards are essential to good classroom design.

Support Facilities

Aside from school classrooms, all schools require built facilities with support infrastructure necessary for children and other school stakeholders.

These include the following:

Sanitation facilities,

WCs and handwashing, and drinking water are the basic forms of sanitation required by all schools.

WCS

Ideally pipeborne water is essential to the delivery of these facilities. However even without pipeborne water, with the design and use of rainwater tanks in connection with WC blocks can ensure flush down facilities. Alternatively the WHO approved V.I.P latrines, if properly designed and maintained will provide adequate sanitation infrastructure for students.



Handwashing Facilities

Few schools have been able to maintain well-maintained WC / washrooms, and since pipeborne water is difficult to deliver, handwashing facilities are often basic, and not hygienic. The use of a Kenyan water bottle hand washer system is advised as being most appropriate for schools with limited access to pipeborne water.

(image four)



Drinking Water

The availability of clean drinkable water is essential for schools. For some pupils this maybe the only guaranteed source of clean drinking water available at no 'cost'. Water, from a guaranteed supplier, if not available on site, should be available and accessible to all children during breaktimes and on request during other periods of the school day.

(image five)



Schools might consider raising funds, or levy small amounts to enable the purchase or acquisition of potable drinking water to be made available to students during the school day.

Social Infrastructure:

All schools have the potential to be able to extend their use by their students and other members of the community further, through the establishment and development of their associated facilities. The key facilities that all school should have are:

Study Areas

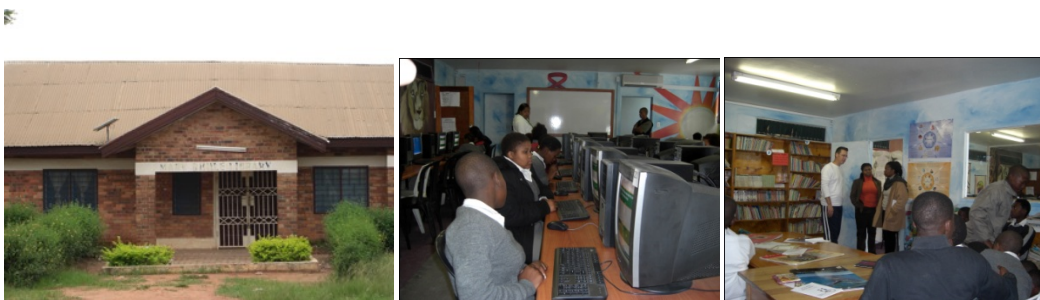
Research conducted by the CSIR in South Africa (**reference**) suggests that students in poorer areas benefit from having classrooms or areas where they are able to self-study, and complete their homework. This is because poorer homes do not have the space for study or the facilities such as access to books and electricity in the evenings.

Libraries /ICT facilities

Libraries and ICT areas are a development on study areas. Historically schools in South Africa benefited from donations of computers from companies and NGOs. The EdQual research study suggests that computer hardware is rapidly becoming obsolete, as laptop programmes, such as the one laptop per child programme running in both countries researched, Ghana and South Africa.

However library and ICT spaces can provide the necessary location in rural and poor communities for the necessary electricity supply and power cabling, and also the necessary wifi/Ethernet connections needed to 'log in' to the digital world. This function makes these facilities fundamental to today's educational experience. The facilities needed in the library can easily be combined to incorporate the study areas mentioned previously.

LIBRARIES AND IT FACILITIES IN SCHOOLS IN GHANA AND S. AFRICA



Cafeteria Facilities for School Feeding

With most schools in Africa now becoming part of the World Bank/FAO school feeding programmes, most have a regular school feeding regime in place for the youngest primary school years. Currently the majority of schools use school classrooms as dining areas. Whilst this provides an adequate environment for school feeding, the design and incorporation of a specific designated cafeteria/canteen area for school meals to be prepared and consumed, would provide the optimal environment for this. Furthermore the provision of a canteen, like the ICT/Library and study spaces, provides infrastructure that can be shared by a wide group of local community members

Existing School Feeding Areas



Administrative Facilities

Teacher's offices and administrative spaces

All schools require administrative facilities and space for headteachers etc. The location of these facilities and offices is crucial to the school plan and its adaptability for use outside of school hours by other stakeholders.



Outdoor / Environmental Facilities

Areas for sport are crucial for successful schools. As school sports programmes are variable, and often dependent on what teaching or coaching support is available, the more flexible the designated area for sport is, the more likely it will be able to accommodate different sports coaching and practice.



Garden /Farm areas

In some countries such as South Africa, the school farm has become a key part of the school plan. The nutritional and community benefits of school farms are obvious. The location of the farms in relation to the school and community and local involvement in its upkeep are crucial to their success.



Summary

This brief introduction has sought to highlight key aspects of school architectural design planning and infrastructure that need to be considered when during school planning; for new schools and for old school alteration.

The table overleaf separates the different elements in school design between the functional or absolutely necessary and the ideal or optimal spaces infrastructure and resources that would ensure that the primary school could perform the role as a community hub in its availability of space resources and facilities to all members of the local school community.

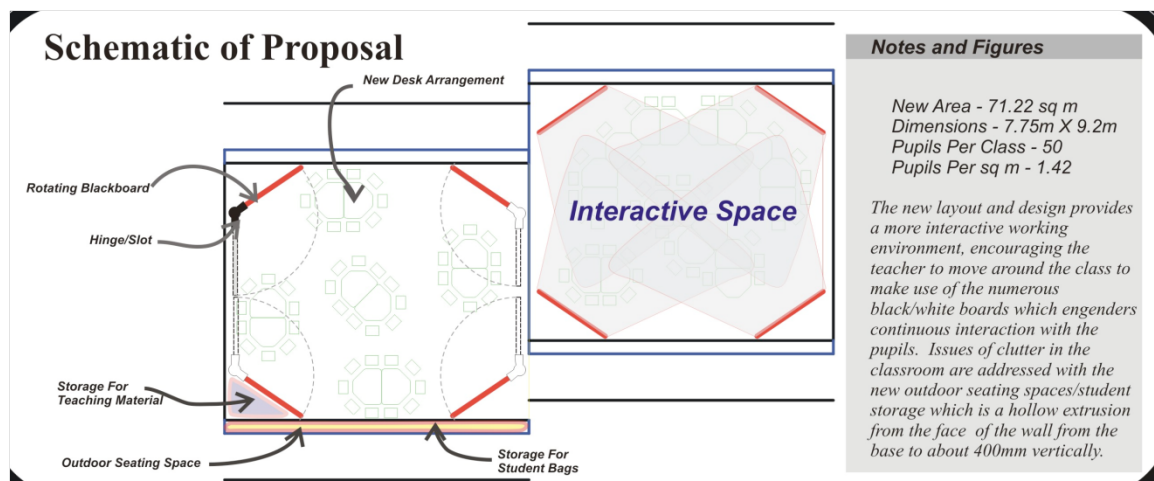
SCHOOL DESIGN REQUIREMENTS

CRUCIAL FOR SCHOOL FUNCTION	USEFUL FOR ENHANCED SCHOOL FUNCTION	OPTIMAL FOR SUCCESSFUL SCHOOL-COMMUNITY 'HUB' FUNCTIONING
Adequately Sized Classrooms	Self-directed reading areas for children	Flexible-plan Library /ICT spaces –open to community
Adequate W.C. Sanitation facilities	Access to drinking water	Borehole facility for pipeborne water supplying school and local community
Playground areas	Designated Sports area for football/basketball/locally popular sports	Community sports hall and multi-sports pitch
Near- or in- school access to snacks or meals for children	School meals	Community Cafeteria/food preparation facility
Pupil access to fresh fruit and vegetables	School farm	Community commercial farm facility
Headteacher's office	Teachers' offices, staffroom and general academic office area	Community accessible office facilities during working hours

As each school context, is unique this design guide seeks to show examples of good practice, and also proposed design solutions for schools. This section acknowledges the contributions from Benjamin Agyeman, Tendayi Ejisu Akropong, and earlier research undertaken by the CSIR as brought to attention by Dr Jeremy Gibberd.

Design Solutions

Typical Classroom

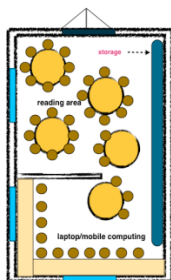


This shows a diagrammatic version of an optimal classroom, addressing the key issues as follows:

Flexibility – with moveable wall panels the classroom can accommodate classroom sizes of up to 80+ students

Storage - designed shelf seats have been included for the storage of students' personal effects.

ICT/Library Reading Room

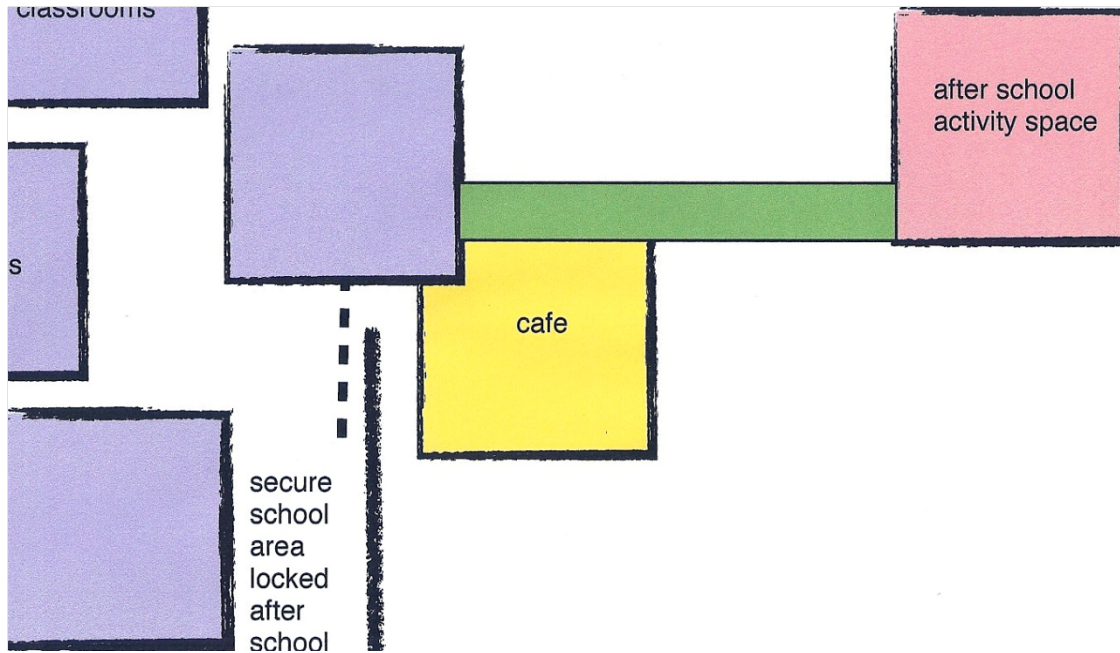


This shows a diagrammatic version of the flexible reading /ICT /library area

The feature highlights the flexible spaces and shelving to take future laptops and mobile devices, whilst a small library area remains designated as necessary for schools in poorer areas where textbooks for students are in short supply.

Cafeteria Dining Facilities

This diagram gives an outline diagram of a hypothetical multi use cafeteria, which has connections to classrooms and educational activity and also afterschool community use.



School Plan/ Layout

Shown is an actual school 'masterplan', (CSIR, 2007) highlighting classrooms and inter-related spaces such as sanitation blocks and library / free reading space areas. It also highlights potential buildings that could be used by community members, such as the cafeteria and library facilities. The location and relationship of the school farms to the school, as well as to the community, is also highlighted.

THUBA MAKOTE MASTERPLAN + TYPICAL SCHOOL LAYOUT



The 'Design Checklist' which follows, alerts planners and designers to contextual factors to take into account when planning schools in urban or rural areas.

Part Three

School Design Checklist

Site

Location

If in rural area – site should be within known pedestrian /transport routes and accessible to students who live farthest away from the school

Environment & Design

Physical buildings should be oriented and planned to make best use of climatological features such as prevailing winds and location-specific sun penetration. The incorporation of sustainable, energy saving features such as Solar Photovoltaic Cells, for night lighting, and rainwater collection tanks for WC flushing etc, should be a norm for all new construction.

Local materials and indigenous contractors where possible should be engaged in the construction and planning process, or partner experienced professional builders in the process.

Classrooms & Learning Areas

Design Size

What are the ‘true’ or likely class numbers to be for the new classes being built
Use these and not the official standardised classroom guidelines

Alternatively design each classroom to be adjoined to another by sliding or folding partitions. Thus, if the recommended classroom sizes are for 40 then by designing these in pairs, classrooms when linked should accommodate 80 pupils comfortably. In rural areas, classroom sizes might follow official guidelines if local population is small and or dispersed

Storage

Built in storage areas are required in all classrooms as shown in earlier diagram. Alternatively a bank of lockable cupboards placed near classrooms might prove cheaper to construct. Small lockable storage cupboards are also useful for classrooms.

Facilities

All classrooms should have lighting and adaptor sockets for plugging in laptop computers etc. This might be partly autonomous if Solar PV cells can be installed on classroom block roofs, particularly in rural areas with no access to grid electricity supplies.

Offices

Teachers offices with the Headteacher’s offices and admin facilities should be grouped and planned as a built block, to allow for sharing of admin facilities such as photocopying, admin support etc. In rural areas the provision might be cut from

recommended planning requirements or used flexibly for student reading space also if the staff population is low.

WCs Hand Washing and Drinking facilities

School sanitation facilities should be designed to have the following:

Rainwater recycling for WCs

The use of either VIP latrines, in areas with no pipeborne water, or access to a borehole. In urban areas the installation of self flushing sluice-type WCs and urinals should be considered.

Clean handwashing facilities in toilets and near feeding areas is also essential. Where there is no 'running' water, the Kenyan wash hand bottle system should be implemented.

All schoolchildren should also have access to clean, drinking water on the school campus. This might be either in the cafeteria area or in the playground.

As with classroom design local materials, labour and environmental conditions should be taken into account in the construction of these facilities.

Other Facilities

ICT/Library Areas

A very essential additional facility

Same construction requirements as classrooms

Can be scaled to respond to rural /urban needs

No computing hardware suggested,

Access to power extremely important for:

good links for computing – wifi/GPS network, access to plug in adapter sockets for laptops / portable mini computers / tablets

Good security at access point to allow for after school and community use.

Student Reading Areas

As with ICT library area, could be doubled up within the ICT library facility

In rural areas the student reading area may later be upgrading to ICT/Computing facility

Cafeteria

Same construction requirements as classrooms

Security and access recommendations as for libraries/ICT facilities, taking into account both school and community 'after school' uses.

Storage for food and cooking area crucial

For small rural schools this might be shared with church or religious facility?

Farm & Sports Areas

These are outdoor designated areas in school plan.

In rural areas, if land is available, schools should aim to acquire land that can be used for agricultural, sports, and future building purposes. The land may be acquired in trust by the community, which should be consulted in relation to any further development plans.

In urban areas land acquisition is likely to be more difficult, it may be possible to develop land in association with local businesses who might be able to make use of after school sports and ICT/library facilities.

The key issues for the community use and extension of school facilities use, are the following

1. Co-operation and communication with the local community and stakeholders
2. The definition of spaces and uses for children during the school day and the flexibility to transform these spaces for out of school use
3. Security of the school grounds, buildings and facilities at all times to enable activities take place during after school hours.

Strategic Campus Planning

When planning a school it is important to consider the process part of contributing more than just a new building but additional social 'value' to the school's wider community. Even if the contribution is 'only' a new classroom block this also should have an impact on the community the school serves.

Some generic issues which therefore should be considered, in this context, are the following:

Access to the school for students and other members of the community

This relates to both daytime access from student homes far from the school, and evening access for the local community in which the school is situated. This is particularly important in urban areas and areas of instability. The wider the access these schools have to pupils and the local community the more successful and important they will become for all community members.

Security

Related to this is also security, secure schools are important both for those using the schools, and the equipment and infrastructure invested in the schools. Schools that are considered part of the community are often 'looked after' by locals, who have a knowledge of undesirable actors and activities in the locality. Thus security does not only involve the design and placement of physical means of preventing school burglary, but also ways in which to ensure the school and its uses are integral to the community, so that the safeguarding of its physical infrastructure becomes an aspect of community responsibility.

Contextual Planning and Architecture

Architects, planners, educators local community members need to be involved in the development of new school facilities. The design and location of the school needs to fit within the local context of its community and meet with the needs of the educators and locals. The need for good design to best incorporate sustainable features and also energy saving requires the direct involvement of architects, designers and planners with the building process, as has been used successfully in the Western Cape Region post 1994 schools.

Expansion

This is a specific contextual issue as the future development of the school campus needs also to be considered not only within the initial plan, to work with the proposed linkages across the community, but also to respond to possible new teaching and community development needs. In rural areas this should not be difficult if there is no pressure on land use. However, in urban areas, early negotiations at the planning stage with adjoining neighbours to discuss future issues such possible school expansion would be expedient.

Linkages and the Hub Concept

Finally, within the contextual development of the school plan, the linkages with the local context as discussed are crucial to good school design. Equally important from the research conducted for the EdQual project has been the need to conceive of the school as part of a local community hub which links in with and becomes in itself a community facility. A successfully designed school should thus, both improve pupil education and childhood outcomes, and have the added benefit of improving the quality of life of the local community with which it shares physical, social *and* educational links.

Further Suggested Reading

An edited selection:

Educational design and theory /guidelines text

Dudek

BRE – Classrooms for the future

Case study Schools

ARUPS School in

FCB School in

A good quality education arises from interaction between three enabling environments: policy, the school, and the home and community

Policies aimed at raising the quality of education for disadvantaged learners in sub-Saharan Africa and other low income contexts need to start by identifying key priorities for a specific national or local context.

A good quality education arises from the interaction between three inter-related enabling environments: policy, the school, and the home and community. Creating enabling environments requires a mix of **inputs** and **processes** that interact to produce desired **outcomes**. What the mix might be for a particular context can only be determined through continuous monitoring and evaluation.

Existing evidence suggests the following quality inputs and processes are particularly significant:

Inputs

- Suitably trained, experienced and motivated teachers
- Headteacher training
- Appropriate textbooks and learning materials
- School infrastructure and equipment
- School feeding, child health and early childhood education

Processes

- A national debate on quality
- National assessment, monitoring and evaluation systems
- Greater accountability and transparency
- A relevant and inclusive curriculum and pedagogy
- An enabling home environment

Origins of framework

There is mounting evidence that, to contribute to development goals, education of an adequate quality has to be available (Hanushek and Woßmann 2007). As budgets are cut, decisions have to be made about priorities for achieving quality. This policy brief presents a framework for thinking about where to prioritise investment.

The framework arises from the work of the EdQual Research Programme Consortium, funded by the UK Department for International Development (DFID), and from a review of related literature.

EdQual RPC and education quality

EdQual's research focuses on how to improve the quality of basic education. Education quality is key to attracting and retaining learners in basic education and ensuring education contributes to other areas of development.

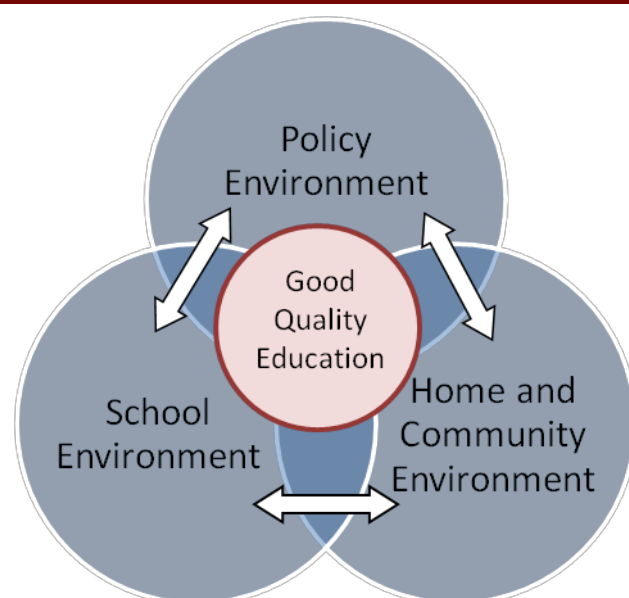
Defining a good quality education

A good quality education is one that enables all learners to realise the capabilities they require to become economically productive, to develop sustainable livelihoods, to contribute to peaceful and democratic societies, and to enhance wellbeing.

The learning outcomes that are required vary according to context, but at the end of the basic education cycle must include threshold levels of literacy and numeracy and life skills, including awareness and prevention of disease.

A good quality education needs to be inclusive, relevant and democratic.

A simple context-led framework for education quality



A good quality education arises from the correct mix of enabling inputs and processes in three inter-related environments.

What is a Good Quality Education?

A GOOD QUALITY EDUCATION ...

... enables all learners to realise the capabilities they require to become economically productive, to develop sustainable livelihoods, to contribute to peaceful and democratic societies, and to enhance wellbeing.

The learning outcomes required vary according to context, but must include threshold levels of literacy and numeracy and life skills, including awareness and prevention of disease.

A GOOD QUALITY EDUCATION MUST BE ...

Inclusive: All learners have the opportunity to achieve specified learning outcomes.

Relevant: Learning outcomes are meaningful for all learners, valued by their communities, and consistent with national development priorities in a changing global context.

Democratic: Learning outcomes are determined through public debate and ensured through processes of accountability.

Box 1: EdQual's definition of a good quality education

Two perspectives on Education Quality

Two main perspectives dominate thinking on education and development: human capital approaches, which are influenced by neo-liberal economic theories; and human rights based approaches, promoted by UN agencies and many international non-governmental organisations.

Within human capital approaches, a good quality education is associated with cognitive achievement and improvements in scores in standardised tests. Threshold levels of literacy and numeracy are important outcomes in their own right, but also lay the foundation for the development of broad-based cognitive skills in later stages of schooling that are key for economic growth, income distribution and returns to investment in education (Hanushek and Woßmann 2007).

By way of contrast, human rights based approaches emphasise a wider set of outcomes, including not only basic literacy and numeracy, but also life skills, including social attitudes, basic knowledge such as HIV/AIDS awareness, and practical skills.

Combining these approaches, EdQual has developed its own definition based on the Dakar Framework for Action (box 1), which reflects EdQual's focus on disadvantaged learners in difficult delivery contexts.

EdQual's Framework for Implementing Quality

A good quality education arises from interactions between three overlapping environments, namely policy, the school, and the home/ community. Creating enabling environments requires the right mix of **inputs** into each.

Accompanying **processes** are key for ensuring that inputs get converted into desired outcomes. Rather like cooking a tasty soup, when planning a good quality education the outcomes depend on the particular mix of ingredients (inputs and processes) and the interaction between environments. The success of the 'recipe' can only be determined by monitoring the quality of education over time.

Creating a good quality education involves paying attention to the interface between each environment and ensuring that enabling inputs and processes have the effect of closing the gaps that sometimes exist between environments.

For example, to overcome the 'implementation gap' between national policy and school level practice it is important to engage with teachers, to ensure teacher education and continuing professional development are consistent with new curricula, and to support schools to monitor quality.

Closing the 'expectations gap' between the outcomes of education and what parents and communities expect education to deliver requires paying attention to the relevance of the curriculum, listening to the voices of stakeholders in national debates, and developing accountability and transparency.

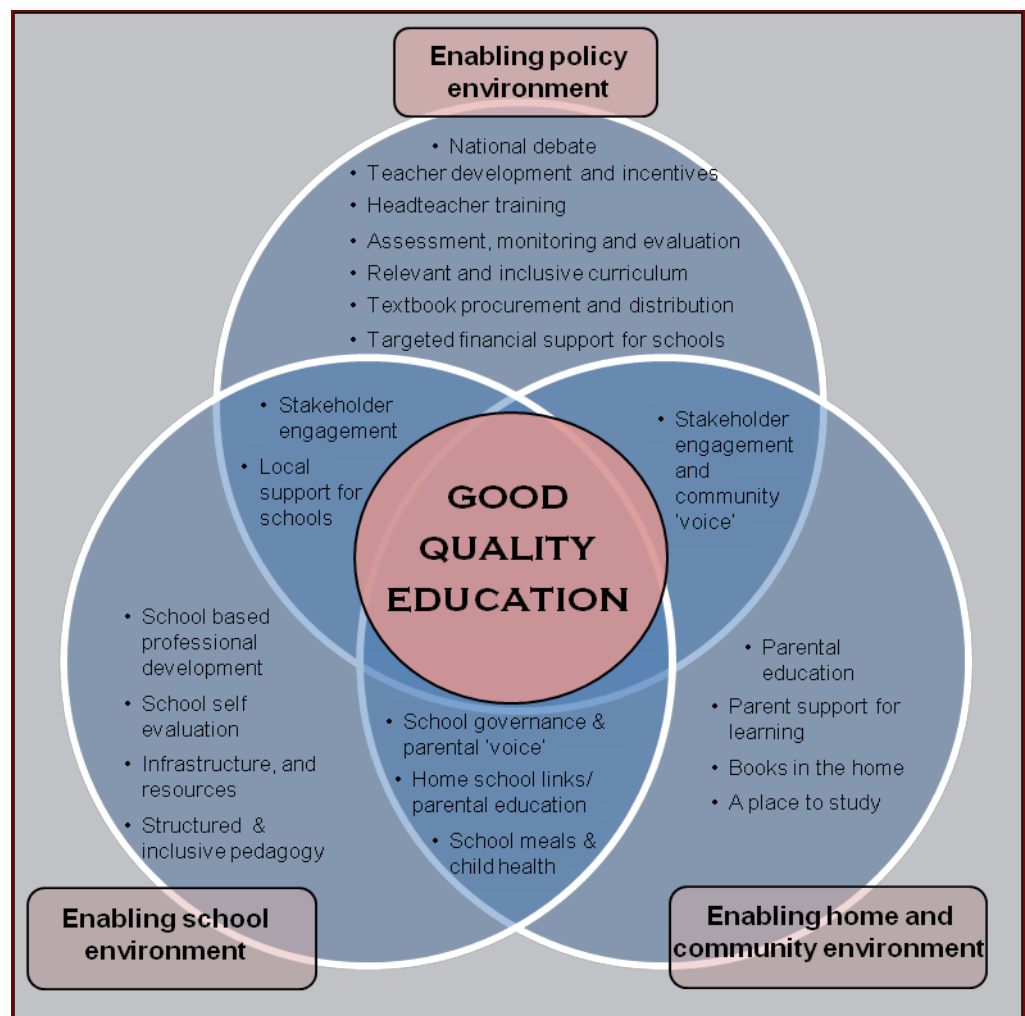


Figure 2: Context-led framework for implementing education quality

Addressing the 'learning gap' that often exists between learning that takes place in schools and the home/ community environment requires focusing on the health and nutrition of learners and working with parents to create an enabling home environment to support learning.

Identifying Policy Priorities

EdQual and related research, largely gathered in sub-Saharan Africa, suggest some policy priorities towards achieving education quality. This evidence needs to be interpreted and set against careful analysis of local needs and realities. Rather than offering 'magic bullets', it provides starting points for debate and suggestions for ongoing research and evaluation about what works in national contexts.

Quality Inputs

Suitably trained and motivated teachers

Some countries in Africa face a severe shortage of suitably qualified and experienced teachers (UNESCO 2008). Initial teacher education and experience has a significant impact on achievement (Michaelowa 2001). Many African countries also face a crisis in teacher morale related to poor salaries, working conditions, and limited opportunities for professional development (Bennell and Akyeampong 2007; DFID and VSO 2008). Evidence from India suggests that incentives can boost performance. A key challenge is getting qualified and experienced teachers into rural schools.

Headteacher training

EdQual research underlines the importance of school leadership (EdQual Policy Briefs 4, 5 and 6). Effective headteachers focus on:

- mobilising resources and using them efficiently
- developing and motivating staff
- maximising time on task
- encouraging parents to support children's learning
- promoting inclusion and implementing girl-friendly approaches

However, headteachers need training in how to monitor school quality and initiate school improvement.

Appropriate textbooks and learning materials

Textbooks play an important role in raising learner achievement (Barrett et al. 2007). A key challenge is the avoidance of corruption and mismanagement of resources (UNESCO 2008). Textbooks and other learning materials need to be appropriate to the environment and to the cognitive level and language abilities of the learner and accompanied by teacher training in their use (EdQual Policy Brief 2).

Textbooks need to be appropriate to learners' language abilities

Infrastructure and resources

Investing in infrastructure and resources can impact on the achievement of disadvantaged learners. A key challenge is to ensure that funding is sufficient and is efficiently distributed to schools (Osei et al. 2009; Dare et al. 2010). A related issue is to ensure that funding is targeted at disadvantaged learners (EdQual Policy Brief 1; Sayed and Rashid forthcoming).

In schools, resources need to be used in teaching and learning. For example, computers are often not used because schools lack support in their use (EdQual Policy Brief 3; Rubagiza et al. 2011).

School meals and child health

For the most disadvantaged learners, improvements in nutrition and health have a relatively greater impact on achievement than in -school factors (EdQual Policy Brief 1). Provision of meals at school and other nutrition programmes can lead to improved scores in academic tests, as can de -worming (Uduku 2011).

Early childhood care and education

Improved access to pre-school education can enhance both education outcomes and equity. Pre-school interventions have a greater positive impact compared to later interventions for children born below the poverty line (EdQual Policy Brief 9).

Pre-school interventions have greater impact for children born below the poverty line



Quality processes

National debate on education quality

In countries that have successfully integrated into the global economy, there has been a good match between education outcomes and changing labour market needs, facilitated by inter-governmental dialogue (Green et al. 2007). Consultative processes can assist in closing the gap that often exists between the national policy context, what goes on in schools, and parental aspirations and expectations.

Accountability and parental and community 'voice'

Increased accountability and parental and community 'voice' are often perceived as important for driving up quality. Initiatives such as Uwezo in East Africa make the results of independently collected assessment data available to parents. The South African government has committed itself to making its own data on the performance of schools available to parents. Ghana has recently introduced school management boards that provide new avenues of accountability and 'voice'. The impact of these and similar initiatives will need to be evaluated over time, although they have been an important part of efforts to drive up standards of achievement elsewhere in the world.

Assessment, monitoring and evaluation

A key priority is to strengthen national systems of assessment, monitoring and evaluation (Barrett forthcoming), including making available longitudinal data relating to schools and individual pupils (Peng et al. 2004). These can assist in evaluating the quality of schools, taking into account pupil intake. Schools can be supported to collect and interpret data for school self-evaluation (EdQual Policy Briefs 5 and 6).

Relevant and inclusive curriculum and pedagogy

Coherence in aims and content within and between phases of the curriculum is key. Movement towards outcomes or competencies based curricula across sub-Saharan Africa has met with mixed success, largely because the support and training needs of teachers are underestimated (Chisholm and Leyendecker 2008). Training needs to be consistent with the curriculum and to focus on teaching practices, such as:

- Use of 'structured pedagogy' (Barrett et al. 2007)
- Strategies for multilingual settings (EdQual Policy Brief 2)
- Use of ICTs to support learning (EdQual Policy Brief 3)
- Strategies to promote inclusion (EdQual Policy Briefs 6 and 7)

School, home and community links

Home and community environment can be an important influence on learning outcomes, particularly for the most socio-economically disadvantaged (EdQual Policy Brief 1). Living outside of a stable family environment, lacking basic resources, poor nutrition, and learning in a language not commonly used outside of school are all predictors of low levels of literacy and numeracy.

Wider economic, political and cultural inequalities are often reproduced within homes and communities. Education systems and schools can play a mediating role through fostering improved links with the community. Schools can play a role in educating parents on how to support their children's learning, providing adult basic education and supporting community development (EdQual Policy Brief 6; Ngcobo and Tikly 2010; Uduku 2011). There is potential for schools to work more closely with other areas of social welfare, including health.

About the Research

The framework and policy priorities presented in this paper are the product of theoretical work on education quality developed over a five year period, including literature reviews (Barrett et al. 2006; Tikly and Barrett 2007; Tikly and Barrett 2011). It also draws on findings from across EdQual research programme.

The brief summarises an article forthcoming in *Comparative Education*, see Tikly (forthcoming) in further reading.

Further Reading

Tikly, L. (forthcoming) Towards a framework for researching the quality of education in low income countries. *Comparative Education*.

EdQual Policy Briefs

No. 1: Determinants of primary students' attainment in Africa, A. M. Barrett & M. Smith

No. 2: Language of instruction and quality of learning in Tanzania and Ghana, J. Clegg, C. Rubagumya & Y. Ankomah

No. 3: Using ICT to support science and mathematics education in Rwanda, R. Sutherland

No. 4: Primary school leadership for education quality in Tanzania, H. A. Dachi

No. 5: Leadership and management of change for quality improvement - Ghana, G.K.T. Oduro & R. Bosu

No. 6: Primary school leadership for education quality in Tanzania and Ghana, G.K.T. Oduro & H. A. Dachi

No. 7: Inclusive education in Papua New Guinea (PNG), G. Le Fanu.

No. 8: Research capacity building: Learning from the EdQual RPC, A.M. Barrett, M. Crossley & H.A. Dachi

No. 9: Early Childhood Care and Education in Ghana and Maharashtra, R.C. Duggan.

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EdQual is a consortium of six higher education institutions in the UK and Africa funded by the UK Department for International Development (DFID) to carry out a five year (2005-2010) programme of research on education quality mainly in low income countries, focusing on sub-Saharan Africa.

EdQual partner institutions are:
 University of Bristol, UK (lead)
 University of Bath, UK
 University of Cape Coast, Ghana
 University of Dar es Salaam, Tanzania
 Kigali Institute of Education, Rwanda
 University of the Witwatersrand, South Africa



EdQual

A Research Programme Consortium on
Implementing Education Quality in Low Income Countries

DESIGNING & PLANNING SCHOOLS FOR PRE-SCHOOL FEEDING PROGRAMMES IN AFRICA: A CONTINENTAL SUCCESS STORY?

EdQual Working Paper No. 20

Ola Uduku

Edinburgh College of Art, UK

September 2009



EdQual

A Research Programme Consortium on
Implementing Education Quality in Low Income Countries

EdQual RPC is a Research Consortium led by the University of Bristol UK and sponsored by the Department for International Development, UK.



The Consortium comprises:

- The Graduate School of Education, University of Bristol, UK
- The Department of Education, University of Bath, UK
- The Institute for Educational Planning and Administration, University of Cape Coast, Ghana
- The Faculty of Education, University of Dar es Salaam, Tanzania
- The Kigali Institute of Education, Rwanda
- The Education Policy Unit, University of the Witwatersrand, Johannesburg, South Africa.

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ABSTRACT

Pre-school feeding schemes in primary schools in South Africa and Ghana have been a qualified success. This paper considers whether the infrastructure and associated resources; staff, equipment etc., that are used to deliver the projects are adequate for the task. Two case studies are presented that describe the current status and working of national schemes in Ghana and South Africa. The concluding analysis considers the achievement of these schemes and, more importantly, the potential to develop them to enhance quality and equity of education.

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1. INTRODUCTION

In 2007, under the EdQual small grants project, a survey was undertaken of a select number of schools in Ghana and South Africa to ascertain whether links could be made between 'good' school design and improved educational performance (Uduku et al, 2007a). In the course of the research that followed, which surveyed nine schools in considerable detail, six in South Africa and three in Ghana, a number of findings were made (Uduku et al, 2009).

A key finding was that both nations now had significantly developed primary school feeding programmes, which has resulted in either the modification or new construction of buildings to enable such programmes take place. This had thus become a common feature of both nations' primary school building infrastructure over the last ten years. There has been now historic recorded research and documentation of the relative success of such feeding programmes in improving school retention figures, and also child wellbeing through nutritive health surveys conducted of its recipients compared with non- recipients of such programmes (see for example UNESCO, 1986; Babu & Hallan, 1989; and McCoy et al, 1997).

This paper seeks to consider whether the schools in each country have been adequately adapted to incorporate the infrastructure (buildings, kitchen facilities, etc.) that are required to successfully deliver pre-school feeding programmes onsite in these schools. Furthermore, it questions what plans, if any, have been made for future schools to incorporate the buildings for feeding programmes within the existing standard planning and layouts for primary schools.

2. BACKGROUND

African schools as common with those in other developing countries have had a long and varied history of planning and design. Commencing from pre-colonial times, the missionary project sought to ensure that alongside Christianity, education and health projects were promoted and developed. "Western" style schools thus are not new to Africa, however their function over time and space has changed considerably, from being literally shelters from the elements where the three 'rs' and religion were taught to native tribes, to today's complement of schools that can include libraries, technology laboratories, and computing suites.¹

There was a temporary improvement of educational provision in then newly 'independent states of West and East Africa in the mid to late 1960s. However despite this, the move towards attaining the original 1960's UNESCO aim to deliver global "education for all" by 2000, from the late 1970s effectively ended with the ensuing global economic crises, and the hardening of Nationalist Party rule in South Africa, that followed this 'independence period' States in West and East Africa. The combination of reduced education spending, poor resourcing and better health care, which lowered child mortality rates, meant there were pressures on the existing limited education systems in place to expand education delivery in most of sub-Saharan Africa.

This was especially true in Africa, where the struggle to provide improved literacy and education stalled in the 1970s. In most of Africa, with the cuts in social spending that have occurred since the late 1970s, there has been limited spending on school infrastructure. Even where spending programmes had been sanctioned, such as the Universal Primary Education Scheme in Nigeria, and its ensuing technical education initiative, the buildings and infrastructure built to accommodate these schemes have remained basic, often without electricity and sanitation that would have ensured the extended use of the buildings within the community (see Bray 1981).

Due to the unique circumstances of the 'apartheid' state, education in South Africa was both segregated and prescribed by the nationalist government. For school buildings this meant that strict building codes were in place for schools to be built in the different educational

¹ For more on schools and education in Africa there have been numerous UNESCO Reports, for South Africa, and Kallaway's (2002) edited "History of Education under Apartheid".

departments that covered all racial groupings in the country (see CSIR 2005, a guide for building schools for Bantu Education). Compared with schools found elsewhere in Africa, some South African township schools did have significantly better facilities planned and built. However, given the 'apartheid' education system that was supposed to be in place, the effective boycott of such schools and occasional arson by students, ensured these schools retained little credibility as edifices for learning (Van Straaten et al (1967).

Despite the decline in the global economy and national funding of education, the elite social classes in West and East Africa, have ensured that the 'top' schools from colonial times, and more recent additions, are able to guarantee their children a near facsimile of a 'Western' private or 'public' school education to GCSE-O-level standard or higher locally. In post-apartheid South Africa, the rise of the historic top 'white' colleges and more recent private fee-paying 'international' schools rapidly filled the post-apartheid demand for independent education, and now caters to an increasingly multi-cultural, multi-race, affluent middle class.

Since the mid-1990s, there has been the easing of the World Bank's structural adjustment conditions. This has had a direct effect on education, as from the 1980s to mid 1990s, the Bank's approach to education funding had focused, less on buildings and infrastructure and more on improved teacher education and school resourcing. Parents and communities were tasked with contributing towards the provision of school buildings and infrastructure, with the state providing supplementary funding. This remained a difficult task for the poorest parents in 'work-poor' communities where financial contributions were limited.

In South Africa, the realisation of self-rule with the ascension of the ANC to power in 1992 resulted in the complete re-writing of educational policy and handing over decisions on school design to the provincial level, with less influence from the central government. Despite this however, standards and norms for space and school design remain in place and determined from the central government in Pretoria (see Gazette, No.31616; Department of Education of the Republic of South Africa).

Elsewhere in Africa, the stark dichotomy between the poorly-resourced state sector education system and the private schools has become clearer, as education in countries such as Ghana and Nigeria in West Africa have become more free market influenced. Ghana, for example, does have a state sector education system that receives government funding, but for many of the more affluent the private sector education system is thriving and in direct competition with the state sector's top schools (Aiyekoo, 2009).

More recently, there has been some re-interpretation of school design through one-off school project commissions in South Africa. This has allowed architects to re-engage with the avant-garde Latin American, Freire-inspired ideas of 'classrooms without walls', (see Freire, 1970) and also some of the earlier 'mission' station ethos allowing integrated facilities such as education, healthcare and demonstration agriculture projects to all take place within an integrated 'hub' for development. This transformation has begun to take on different forms, school feeding programmes have become an increasingly popular way for governments and supporting NGOs to support children in school, and also extend the developmental ethos of the school.

2.1 School Feeding Programmes:

School feeding programmes have had a more recent history in much of Africa. Borne from the understanding of the need to provide nutrition to children as a prerequisite for educational development, UNESCO has been involved in feeding programmes via the World Food Programme and other United Nations organisations since the end of World War II.(see Kennedy & Davis, 1998; Greenhalgh et al, 2007; LSTM/DfID, 2008)). Africa and other developing areas have been beneficiaries of different feeding projects over the years. Since the late 1980s, the current form of part NGO part State funded pre-school feeding programmes have been trialled initially in much of the developing world with recorded programmes in Eastern, Western and Southern Africa (ibid).

South Africa has had pre-school feeding programmes in place for more than a decade. These were initially piloted by Non-Government Organisations who had helped with education in the nationalist era, and became a national government programme in 1994, which is implemented at the provincial level to all schools deemed to be in areas of low socio-economic achievement (see Kallaway, 1996).

Ghana's school feeding programme, (GSFP) began in 2005, and as of 2007 was still operating in 'pilot' schools in chosen locations, with a view to the government rolling it out across the nation in 2010.² Worries, however, have already been aired about the cost of the programme, (Amevor, 2008; World Food Programme, n.d.)

In this paper, an analysis of the current infrastructures, in place to support the schools with feeding programmes that the author visited in both South Africa and Ghana in 2007, are analysed in relation to the needs of the programme. (Uduku:2007)

3. ANALYSIS

3.1 An Overview of School Feeding Programmes in Two African Countries

In South Africa and more recently Ghana, the education authorities in collaboration with international NGOs, such as the World Food Programme and also health bodies, have successfully established school feeding programmes for junior primary school pupils. Both countries employ similar organisational arrangements where the food preparation is franchised to local contractors who bring the food on site to distribute to students at appropriate 'feeding times' and then are expected to clear their meals and paraphernalia at the end of the feeding period or school day.

3.1.1 South Africa

South Africa, which has the older of the two programmes, has facilities for feeding available in most schools that have been designated as being located in communities with the poorest socio-economic indicators and consequently low educational attainment. It is now often coupled with the government backed 'grow your own food' programmes, which involve the planting of crops on school land for commercial use, and also increasingly for use as ingredients for the school feeding programmes (De Klerk et al, 2004).

The age span for take-up of the free school meals officially is meant to incorporate the pre-school students, aged five, and through to all primary pupils. In some schools and provinces there were further variations to this. For example, in KwaZulu Natal, a school visited had an increased after-school feeding programme funded via a local NGO which provided finances for the school feeding to take place both during the school day and also at leaving time for vulnerable youngsters.

² There had been earlier NGO supported school feeding programmes, in certain areas. See Kennedy, 1991.



Image 1 – School Feeding at Dr Vilikanzi Primary School KwaZulu Natal

The budget for school feeding comes directly to the school from the provincial government and therefore is guaranteed on a term-by-term basis, which means that it is safeguarded from the uncertainties of local / parent contributions. A number of studies have cited the South African school-feeding programme as having positive benefits (from a scale of marginal to considerable) on the nutrition and learning profiles of its recipients. Certainly in the KwaZulu Natal schools visited, the benefits were positive in the two schools visited where in some cases more than 50% of class pupils were HIV orphans, who depended on the school feeding programmes for much of their daily nutrition.

In two of the schools visited, carers and parents of the school children were actively involved in the school farm project, growing vegetables which they either sold back to the school for use in the school feeding programmes or they used themselves to supplement their nutrition needs.



Image 2- School Farm Project, KwaZulu Natal

The meals for distribution were partly cooked on site with storage facilities being available in the schools for raw materials. A sub-contractor scheme was in place for catering, although many student parents and carers were involved with the distribution of the food.³

3.1.2 Ghana

Ghanaian School feeding programmes have been relatively recent developments. Funded in part by the United Nations World Food Programme, they were initiated in 2005. The school feeding programmes are targeted specifically at the pre school and grade one primary pupils, as part of a wider mother and child nutrition policy supported by the World Food Programme. As of 2007 the feeding project was still in 'pilot' stage with a few chosen schools having the pre schools feeding programme in implementation.

Two of the schools visited were part of the programme. One, 'Atonsua School' was located in a 'peri-urban' part of Kumasi. The second, RC Kuntanase, was part-Catholic Church funded, and located in a semi-rural location (Kuntanase) some miles away from the nearest main town, Kumasi.

At Atonsú, the peri-urban school, the feeding programme had resulted in the construction of a new three-classroom school block, which accommodated the new pre-school classes and doubled as a feeding area for use by the students. A small kitchen facility was also constructed to 'service' the feeding programme in the classrooms.

The food for distribution was cooked entirely offsite by the subcontracted caterer, and brought to the school in prepared form.



Image 3 – Atonsu Pre-Primary School Wing Constructed in 2007

Thus, the kitchen facilities were only used for distribution of the food. In the more rural school, part owned by the Catholic Church, the school feeding programme was fully funded by the World Food Programme, but no new classrooms had been built or facilities made available for distribution of food. The food was also cooked offsite by contractors who brought the food to be served out to the children on the school premises.

³ Communication with Principals at both Musi Thusi and Dr Vilikanzi primary schools in KwaZulu Natal.



Image 4 – Classroom Meals Atonsu Primary School Ghana

3.2 Space and Design Implications of School Feeding Programmes

The pre-school feeding programmes in each country, although different in coverage and status, both provide developmental benefits to the child recipients of the programmes and also new programme functions for schools. The historic genesis of schools in Africa and elsewhere in most post-colonial regions, despite in the past being connected with missionary and colonial government campus style educational institutions, have more recently been more mono-functional in their focus and design.

With the economic changes from the late 1970s onwards, the state education sector has been encouraged to focus much more on delivering basic education at primary level with the psychometric standards and norms of classroom size, developed by UNESCO and local organisations such as the CSIR in South Africa and the West Africa Building Research Institute/BRE in Ghana's case. (See Appendices 1 and 2 for a 'typical' floor plan for Atonsu School, Ghana c.1960s.)

The stripping back of the 'developmental' or possible community outreach function of the school also falls within the transformation of development policy to a neo-liberal stance, where the onus moved from the schools being beacons of development, to a reliance upon local self-help efforts to develop the 'needs' of local communities. This in, effect, ensured that more economically successful communities of interest were able to organise and fund school building projects, which were occasionally part-subsidised by state and NGO funding. Unfortunately, the poorest sectors of society rarely benefited from these policies as the wherewithal to either organise or contribute part funding to school building projects was lacking.

In effect, therefore, the last twenty years has left a legacy of standardised school 'shelters' at primary level in much of Africa. In South Africa, trickles of NGO funding has meant some poorer areas have marginally better quality schools, through the largesse of international and national NGOs, however generally at primary level the classroom has had a mono-functional existence.

Since the establishment of the ANC government in 1994, there have been a few exceptions to the rule. The CSIR, some educational NGOs, and a few provinces such as the Western Cape educational Department, have been involved in developing demonstration school designs that have resulted in a few exemplar schools which have been built to a broader functional brief.

The school feeding remit is part of the National South African education policy, for example, whereas the provision of integrated community facilities, such as libraries and IT centres, is encouraged but not mandatory for new schools. Newly designed schools in the Western Cape have in many cases managed to incorporate some community functions, such as libraries, within their design.



Image 5 – Public Accessible Library Block, Inkwenkwezi School, Cape Town

In Ghana, the position is more basic. The typical Ghanaian classroom block remains designed to conform with the UNESCO space standards and guidelines. The regulation for this is now in the hands of “ADSEL Services Ltd”, a government owned parastatal, which has the remit to oversee and provide design guidance for all government facilities such as schools, prisons, police buildings etc.

Design guidelines were being drawn-up for the new pre-school feeding programme facilities, but these were more related to space for the new pre-school classrooms, as previously the state primary school system did not have pre-schoolers. There were also to be guidelines for the design of small designated food distribution areas, the emphasis being on food distribution and not food preparation or cooking on site.

In Ghanaian schools, as in the South African schools visited, the school meals were as a rule eaten in classrooms. The service and distribution of the meals varied, but generally there was some provision of space for the distribution of food, often cooked offsite, and the storage of plates and other utensils related to feeding. Some South African schools did have kitchens and food stores on site, but these seemed to be the exception to the rule.

3.3 A Performance Evaluation of School Feeding Programmes

In the schools visited during field research, the school feeding programmes were both very popular with students and schools. There had been some statistical evidence to show that enrolments at junior level remained high, with staff attributing much of this to the school feeding programme in place. Interviews and research showed that the KwaZulu Natal programme was a lifeline to the high percentage of children affected by the AIDS pandemic. Furthermore, its coupling with the school farming programme meant that families involved in farming on school land had the double benefit of children being fed and their access to the farm produce, which was either for family feeding purposes or for small profits on commercial sales.

The continued ‘ad-hoc’ add-on nature of the school-feeding programme to the existing school classrooms in both countries has not diminished the success of the programme. However on interview staff did mention that it was often difficult to ‘monitor’ or organise food distribution and production at schools, as the sub-contracted caterers had to procure and deliver their food to the classrooms of the charges within specific time periods. The one demonstration school example, visited in the course of the research project in KwaZulu Natal, where there were non-classroom areas that students could sit in and eat and contractors could serve the meals worked particularly well. However, this was a one-off school design, its architect now being deceased.



Image 6 – Musi Thusi Primary School areas without walls KwaZulu Natal

The literature available on school design would suggest that well-integrated educational architecture contributes both to the public realm and also to the quality of the educational experience. In African countries and elsewhere in the developing world, this may be considered a less crucial feature of educational provision, compared to ensuring that there are enough classrooms, teachers and other direct resources for learning in schools.

However, the evidence would suggest that school feeding programmes contribute directly and significantly to improved school learning and retention at early years, thereby improving the longer-term outcomes of vulnerable learners from poor economic strata of society.⁴ This is especially so when, as in much of Africa, there are health issues from childhood malnutrition to full-blown AIDS cases whose main access to services and food may well be the classroom. Following this argument then, ideally better catering and school feeding facilities designed as a standard part of all new school infrastructure would both ensure that this linkage is strengthened, and also contribute to a virtuous cycle of improved service provision and access in many poor communities.

4. CONCLUSIONS

When compared with Western, specifically British, education support services, the schools feeding programmes in Africa are similar in vision to the Labour Government 'Sure Start' programmes in place in deprived areas in the UK. The absolute metrics of success of the Sure Start programmes, like the feeding programmes, vary although most show some if not fully significant improvements in all areas.

In Africa and elsewhere however, an improvement in children's nutritional status, or increased retention at school can be crucial to a child's existence, and in effect their educational outcomes, as for many of the poorest, school feeding programmes do provide both an educational lifeline, but more importantly a nutritional and health outline to themselves, and in some cases such as the described Kwa-Zulu Natal, a family lifeline.

The design of these facilities can still indirectly further improve educational outcomes. Field research suggested that influence of schools, particularly in their involvement with outreach programmes and the sharing of facilities such as libraries, in poorer areas to local community remains weak. In the current generation of new-build and traditional school refurbishments, this remains the case with a few notable exceptions. The school feeding programme, by its nature, lends itself to community participation and resultant outreach which could be furthered

⁴ The UK 'Sure Start' and the more recent Building Schools for the Future programmes both have as a core function of their optimum service provision the ability of future facilities to provide not simply a mono functioning service (education or care) but multi service activities such as adequate feeding, out of hours educational activities and other functions. See HMSO, 1998 and DfES, 2008.

if the architecture or design of feeding facilities played the dual educational support function and also connection function with the wider community.

As with libraries, the feeding facilities could, with some modification, become a resource for both the school and also the local community. As with the Natal schools, members of the community could become involved in both supplying raw foodstuffs from farms and also in its preparation and distribution. The location of these school-feeding spaces could also lend itself to use outside of classroom hours.

Organisationally, however it is clear that to manage and fund the extended use of school facilities is beyond the current remit of school employees and administrators in today's schools. This does not, however, mean that with outlined schemes as these in place there could not be the employment of a new tier of staff whose duty it might be to sustain and maintain these linkages with the community after school hours.

This has been the de facto role of NGOs in the past, particularly in countries such as South Africa, Ghana and in parts of Latin America, where the state's provision of education was limited, or non-existent, but the facilities were available for others to use in the after school hours as they saw fit.

The incorporation of these informal non-'school-related' uses, still continues today amongst varied groups, including evangelical churches, social clubs, etc. It could be possible that through the usage of the designed school feeding facilities, such groups and wider members of the school community; including parents, householders and others near to the school, could become more aware of and prepared to involve themselves with outreach and development activities that are school based.

It is also possible that facilities, such as public libraries and internet access hubs, could become better locally connected or linked as outreach posts through schools, with the additional buildings and infrastructure in place for these activities. The additional cost of providing a school dining hall area, and adjoining kitchen for school feeding programmes might pay itself back if the multipurpose facility created is then used for community activities out of school hours.

The premise of this paper has been to explore the impact of school feeding programmes in two countries in which field research was conducted in 2007. The findings that have emerged suggest that school feeding programmes in both countries schools that were surveyed had been a success, demonstrated by the improved student retention at junior level, and also parent interest and comments about the scheme. (Uduku et al. 2007) From the subsequent analysis and examination of literature and precedent examples from elsewhere, particularly the current UK-wide schools rebuilding programme, the importance of 'value-added' facilities and infrastructure in community facilities such as state schools is clear.

Some key findings can be drawn from the paper's analysis of the success school feeding and the design of the schools to incorporate the related infrastructure for these programmes, in both South Africa and Ghana. Firstly school feeding programmes are relatively low in new infrastructural needs. For existing schools, as was seen almost exclusively within the researched schools, classrooms are able to double up as feeding areas. However, the need to have better distribution facilities, and ideally cooking facilities, on site is more crucial than in the West where transportation, and onsite electricity enables the outsourcing of schools to be economically viable.

Currently, the areas in which most primary schools outside of urban centres in Africa exist have limited access to public services. Developing and equipping school feeding centres could therefore become a core 'hub' activity for such communities and tie in well with 'grow your own crops' programmes, which already exist in countries such as South Africa, to become 'health and nutrition demonstration projects, akin to some key objectives of the UK Sure Start programme and other objectives set out in the white paper, "Meeting the Childcare Challenge" (HMSO 1998).

Furthermore, in acknowledgement of the practice in place in both South Africa and Ghana, there is an advantage in 'de-linking' school meals provision from the educational/admin tasks of running schools. However, there need to be sufficient links and connections between the school staff and the meal providers to enable the facilities and infrastructure to be best used and adapted to the needs of the programme. In some of the visited schools, there was little that staff could do to help with storage requirements or sometimes space requirements for the meal providers, making the programme difficult to run on some occasions.

Also the programmes that seemed to be most successful, as might be expected, were those that integrated most with the local school community. Often, parents and relatives of students in the successful school feeding programmes were involved in helping the school feeding contractors, or in some cases contractors were picked from parents of existing children. The need to ensure that the programmes are locally supported and have local involvement is crucial to their continued growth and success.

Finally, the potential of the school feeding programme, its built infrastructure and the associated services, to become the core of future local 'outreach' development hubs in areas such as healthcare and adult vocational education is considerable. There are contemporary precedents for this both in the West, a close example being the 'Sure Start' childcare programmes, and their relationship and sitting within schools in the UK. Further afield in other developing countries, as well as in the West, there is ample evidence that integrated health promotion developed via schools and other community institutions are particularly successful (Gillies, 1998).

In keeping with the key thesis of the author's "Schools as hubs for educational development research project", the school feeding programme demonstrates that the incorporation of adequate space and facilities for school feeding programmes within existing schools enhances the education chances of vulnerable children and improves education experience and quality in the schools involved. More importantly, the research findings suggest that improved design to accommodate functions, such as feeding in schools, and furthermore allowing such facilities to be used by the community, would further enhance local contact and involvement with schools and the virtuous circle of community focused development enhanced by local access to available social infrastructure, such as schools.

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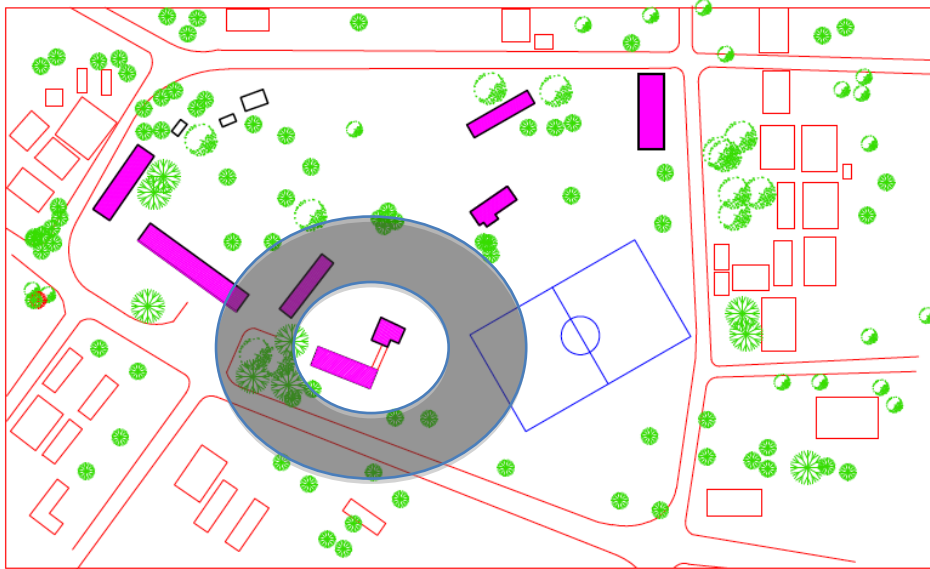
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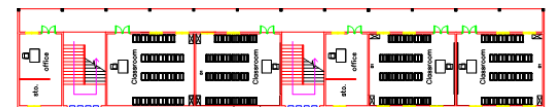
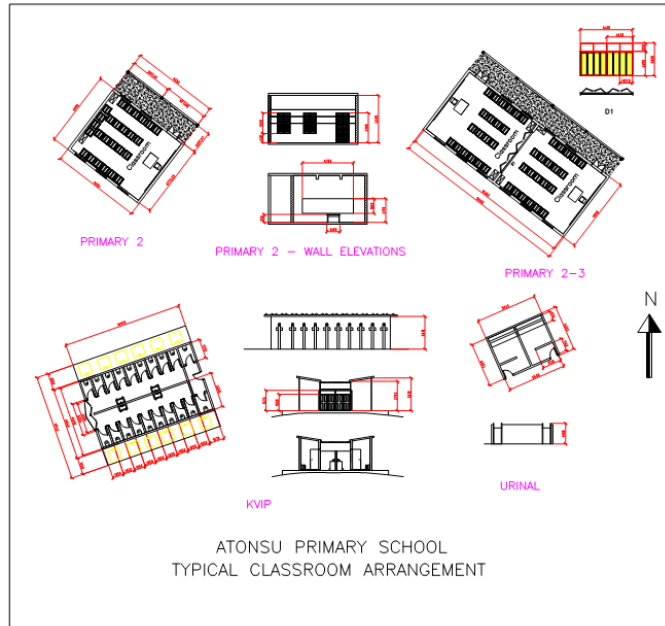
APPENDIX 1

Atonsus School layout Ghana. Central area = preschool feeding class + kitchen

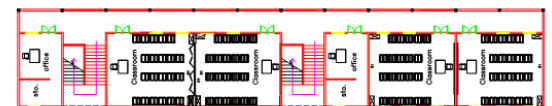


APPENDIX 2

School drawings for Atonsus School, Kumasi Local Government Ghana



ATONSU CLASSROOM BLOCK GROUND FLOOR PLAN



ATONSU CLASSROOM BLOCK FIRST FLOOR PLAN

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TEACHERS

"they have a power which is second to none...the teachers now at work and going through training college...are shaping what [the country] will become"

Julius Nyerere, Tanzania



Teacher, South Africa

This is the third edition of the EdQual Newsletter and it's focused firmly on teachers – head teachers, primary or secondary teachers, teachers of teachers. Teachers are the backbone of any form of quality education, whether they are inspiring their pupils face to face or writing distance learning modules.

The articles in this Newsletter range from the practical (sanitation in Ghana) to the hugely ambitious (Education For All by 2015), and from individual contributions (one PhD student in South Africa) to the involvement of EdQual in international television series and conferences.

"There is little point in providing the opportunity for a child to enrol in school if the quality is so poor that she will not attend, become literate, numerate and ...equipped with skills for life"

www.unicef.org/girlseducation

Everywhere in the world there are examples of born teachers who enthuse their students despite impoverished environments. Most teachers develop their skills 'on the job', with support from Teachers' Colleges, professional workshops and each other. Where training and resources are inadequate, the quality of teaching and learning is affected. Again and again, research and researchers demonstrate that quality education is dependant on an adequate school infrastructure and environment, on teachers' and learners' communication skills and on school leadership. Environment is included in UNICEF's five elements of quality education; Dr Ola Uduku has surveyed schools in Ghana and South Africa to find out what effects the design of buildings has on a primary school. And as Audrey Msimanga found in the course of her PhD research, complex skills such as argumentation can only be an ideal when the basic skills of teacher science talk have still to be learnt. And in the Sources for Resources section of this Newsletter, we highlight the work of TESSA, a programme supporting teachers in sub-Saharan Africa.

We hope teachers and those who work with them will find this Newsletter interesting and stimulating – we hope you will give us feedback and contribute to our research projects by sharing your own experiences and discoveries, whether positive or negative. How do you use ICT? How do you run a lesson with over 60 pupils? How do you teach pupils who do not understand the language you speak? How do you find support and encouragement under difficult circumstances? Do contact us—details are on the back page.

"Teachers who are committed to their profession and who are willing to engage with pupil learning, parents who value education, and pupils who are also committed to learning themselves, should be the key players to achieve quality education."

Tanzanian Education experts talking to EdQual's SeeQ researchers

Quality School Buildings for Quality Education



Dr Ola Uduku
Edinburgh College of Art, UK

EdQual is supporting a number of small scale Research Projects; one of these is "Schools as Development Hubs for Learning", led by Dr Ola Uduku, of Edinburgh College of Art, UK. She is working with Prof. George Intsiful of KNUST (Kwame Nkrumah University of Science & Technology), Ghana and Dr Jeremy Gibberd, CSIR Built Environment, South Africa.

Research in education theories and practices often focuses on areas like learning outcomes, how teachers teach or how the curriculum is designed. This project is different. The researchers are architects and they are interested in how an African primary school's buildings and layout can best support the children's learning.

Over the past year, the team has surveyed nine case-study schools in remote and peri-urban areas in South Africa and Ghana, including the Western Cape, Kwazulu Natal and Gauteng regions of South Africa, and the Kumasi region in Ghana. They have interviewed school staff as well as key people in the education and planning ministries. They have also filmed a day in the life of each school, and surveyed typical classrooms and other teaching areas. Back at their desks they have analysed the class sizes and performance at each school over 5-10 years.



Researchers in Ghana

Overall, their Report shows a case of hope and experience seldom meeting. Many of their findings will be sadly familiar to teachers working in primary schools across Africa but they also found some surprises.

"In most of the areas surveyed, staff and pupils have to work with buildings and facilities that just weren't designed for the 21st century."

Ola Uduku

Not surprisingly, those with better facilities have higher enrolment figures and are more in demand but in spite of inadequate buildings and resources, all the schools show good exam performances. It's a credit to the teachers that they are able to produce these good results despite their surroundings.

"when class numbers exceed forty, one is not teaching; one is using crowd control."

South African primary school teacher

Overcrowding is a key issue that featured prominently, particularly in the urban schools. School planners in both countries base their school building plans on the UNESCO design standards but these have not changed to take account of migration to the townships and peri-urban areas. Add to this the "fee-free" education policy in both countries and you have more children than ever being enrolled at all primary levels.

Some schools have devised ways to cope, while others struggle. One school in Ghana has adopted a whole shift system with the equivalent of two schools using the same facilities; one in the morning, one in the afternoon, switching around each month. But simply having so many pupils affects practical as well as educational aspects of the school; cooking and eating space, sanitation, and sharing already limited resources such as ICT.

Health proved to be a major issue, exacerbated by overcrowding and the inadequate school building design. In South Africa, many pupils are already exposed to AIDS related illnesses and many are orphans looked after by their extended families. In Ghana, pupils face regular health problems related to malaria and other tropical diseases. In both cases, poor healthcare on top of the normal state of affairs leaves the children quickly exposed to infections, which can spread rapidly in crowded schools.

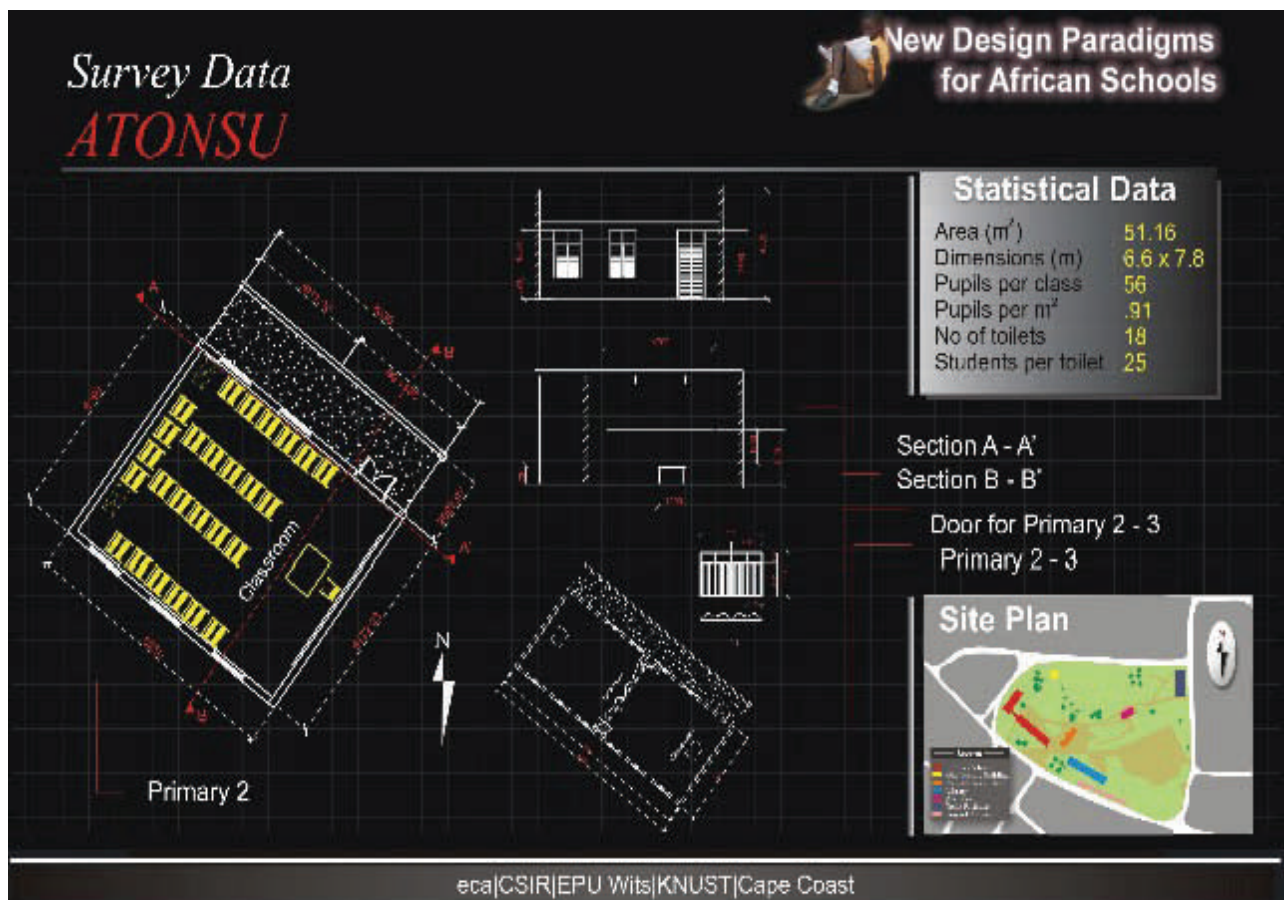
Sanitation is a typical example of these health issues being affected by inadequate school building design; all the schools visited have access to some sort of water supplies, but actual latrine or toilet provision is poor and sometimes appalling. In Ghana for example the case study schools have very limited access to pipe-borne water. In both countries, the toilets surveyed simply weren't designed to cope with the numbers using them. Plus the planners hadn't taken into account how many pupils wouldn't know how to use them, having poor or no sanitation facilities in their homes.

The researchers found other cases where plans and reality didn't meet. For example, in both countries the original school plans included widespread ICT access. So in South Africa the surveyed schools often have whole rooms designed for computers ...but no computers. In Ghana the electricity supply is frequently interrupted, making the use of ICT almost impossible even in schools which have computers.

The researchers also discussed with the schools how they might share their library or ICT facilities with their local communities. In practice only a few already did this or felt able to do it. Local control of administration or resources, lack of security or funding, as well as the schools' design and layout made after-school use very difficult.

Dr Uduku and her team are planning to publish their findings both as an academic Report, and also as a handbook targeted at local schools and education administrators. They will include a number of recommendations, such as providing library and ICT resources that work in the classroom instead of needing their own buildings, and adopting sanitary systems designed for high user rates. They have also suggested a number of potential joint projects between Ghanaian and South African institutions.

Both the Report and the handbooks will be available at www.edqual.org or by contacting EdQual (cf contact details on the back page).



Research Site Plan for Atonsu Primary School. Ghana

Source: Dr Ola Uduku, Edinburgh College of Art, UK

Comparing Research and Experience – SeeQ Project Findings

EdQual's School Effectiveness and Educational Quality (SeeQ) Project is using statistical analysis and consulting local experts to find out what makes schools effective in sub-Saharan Africa.

The approach taken by the SeeQ researchers contrasts with that of Ola Uuku and her architectural colleagues. Dr Uduku's team has looked at how the practical aspects of education in African schools affect their results. SeeQ starts with data and information on pupil performance, and pupil and school characteristics, from a very large number of schools.

The statistics analysed by the SeeQ team are collected by governments within the SACMEQ Consortium (Southern and Eastern African Consortium for Monitoring Educational Quality). SACMEQ II data consists of reading and numeracy results from tests sat by 40,000 pupils and their teachers in 14 countries in Southern and East Africa. It also includes data on pupil, class and teacher characteristics as well as on the schools themselves.

The SeeQ team aim to estimate the contribution of the school characteristics to the pupil and teacher performances, using the latest statistical techniques.

Alongside the statistical research, the team are consulting educational policy makers, teachers and other key stakeholders, principally in mainland Tanzania, Zanzibar and South Africa.

Does repetition raise performance?

One key difference between the practitioners' views and the statistical research has already come up; on pupils repeating a grade. Few of the practitioners thought that repetition at Grade 6 or the number of times a grade was repeated has much of an effect on the pupils' results. But the SACMEQ data suggests that the number of times a grade is repeated has a negative effect on the pupil's performance – except for a single repetition at Grade 6.

In most other respects the practitioners have agreed with the statistical research about which factors most affect pupil achievement. School factors that most strongly appear to raise pupil achievement are

- Teacher subject knowledge and skill
- Head teacher's academic qualification
- Overall school resources as well as the school's library facility and policy, availability of exercise books and pens.



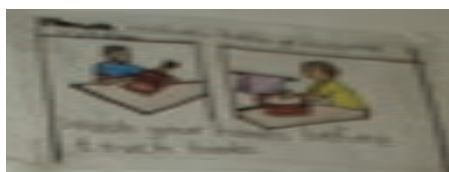
Classroom in Tanzania

School factors that appear to reduce pupil achievement are

- Large class sizes
- High pupil absenteeism
- Teacher behaviour problems (eg absenteeism)

The 'class size' factor echoes the findings in Dr Uduku's research as well as numerous other projects – overcrowding makes both teaching and learning difficult. It could be assumed that this might also affect pupil absenteeism and teacher behaviour problems.

Language of instruction matters



School sign in Tanzania

Language of schooling is a hotly debated issue in Tanzania. It is the subject of another EdQual Project – the Language & Literacy research in Ghana and Tanzania. The Tanzanian and Zanzibarian experts consulted by the SeeQ team could not agree on whether the language used in schools should be English or Kiswahili but all felt strongly that the language children are taught in matters enormously.

But it's people's attitudes that count for so much

The key factors identified by those actually working in and with schools were to do with people and their attitudes. They were very clear—

"Teachers who are committed to their profession and who are willing to engage with pupil learning, parents who value education, and pupils who are also committed to learning themselves, should be the key players to achieve quality education."

Source: Dr Guoxing Yu, University of Bristol UK

How do these views compare with yours? The SeeQ Research Team would be very interested in your experiences; what have you found that helps or hinders quality education? Their University of Bristol contact details are on the back page of the Newsletter.

Who Runs the Lesson – the Teacher or the ICT?

***"I hear and I forget, I see and I remember, I do and I understand."* (www.ngsir.netfirms.com/)**

The Kigali Institute of Education (KIE), Rwanda, is leading EdQual's Use of ICT to Support Basic Education in Disadvantaged Schools and Communities Project. The Project team are designing and evaluating teacher development initiatives that will raise teachers' competence and confidence to use ICT in teaching and learning and introduce communities to ICT.

The debate over what dictates the quality of a lesson, whether it's the teacher or the teaching and learning resources, is long-running. ICT often stands accused of encouraging teachers to 'tell not teach'. As part of their EdQual research, KIE has been running a series of workshops that look at how ICT can be used to *support* the teacher, without taking over the lesson or replacing sound teaching skills.

Much of the feedback from the teachers involved confirms all the advantages and convenience that makes ICT so attractive to teachers.

"explaining information with the help of power point makes the teacher confident because some definitions are given and illustrations are very clear"

"preparing the lesson takes a short period"



"learners are highly motivated; they are curious and eager to manipulate things"

Rwandan teachers

Pupil and teacher in South Africa (UNESCO)

But the research also highlighted how it is possible for teachers to become over-dependent on powerpoint. For example, although some teachers reported significant time savings when using ICT, the time saved was not always devoted to the preparation, explanations, exercises and sharing that make for quality teaching.

"teaching [with ICT] takes a short time compared to traditional teaching learning style"

"it's easy to teach using ICT"

Rwandan teachers

In one workshop, the researchers showed primary and secondary school teachers a film of three lessons being taught using ICT. The teachers' criticisms of what they saw confirmed that even ICT cannot replace basic teaching skills, and that there is a danger of ICT allowing an inexperienced teacher to avoid actively engaging with the pupils. Some of those watching felt keenly that a teacher's work should be to facilitate but that most of the work should be done by the pupils.



Handwritten teaching in Tanzania

"use of power point does not apply to some topics; a teacher has to write something in addition to verbal explanations."

Rwandan teacher

"it is not easy to teach maths using power point; some things require practical calculations on the chalk board".

Rwandan Maths teacher



Pupils at individual keyboards in Rwanda

As ever, the secret will be to capture the advantages of using ICT without losing the teaching skills that keep ICT in its place - as a tool, not a teacher.

Source: Mr Alphonse Uworwabayeho, KIE Rwanda

Between Languages



Dr Noah Mtana,
Morogoro Teachers' College,
Tanzania

Morogoro Teachers' College (MTC) is a leading teacher education institution in Tanzania. Noah Jonas Mtana is a respected Head of Department at MTC with over ten years experience of teaching in primary schools. He is also a researcher on the EdQual Language & Literacy Project in Tanzania and speaks with authority on the role of language in teaching in Tanzania. His article looks at what teacher educators from Morogoro Teachers' College say about improving communication in school classrooms in Tanzania.



Teacher Educators in
Tanzania discuss
teaching teachers

It is generally accepted that clear pupil-teacher communication is crucial to the transfer of knowledge in a classroom. This process can be undermined by a variety of factors. For example, the inexperienced use of resources such as ICT and the overcrowding endemic in peri-urban schools are discussed elsewhere in this Newsletter. But a discussion among senior MTC teacher educators on Improving Communication in Classrooms highlighted a more fundamental threat to communication.

"There are teachers still who think teaching is only telling... they have to get away from relying on talk and chalk".

There are some very professional and effective teachers out there, they say, but there are others who "still think that teaching is only telling". In the opinion of the educators, inadequate teaching skills mean that classroom communication in primary and secondary schools and even in some teachers' colleges, in Tanzania is poor, and frequently one-way from teacher to student. One-shot training workshops are not enough to broaden these teachers' day to day classroom communication techniques, yet they are rarely offered sustained school-based professional development.



"Education For All"

But even 'talk and chalk' relies on being understood.

As in many African countries, language of instruction is a major issue. In Ghana, the change in language is around year three in primary school. In Tanzania children are taught in one language in primary schools and in a different language in secondary schools; Swahili at primary level and English at secondary. This is regardless of the language they use at home or have grown up with. For many it is a case of not only learning a whole new language, but of learning how to apply it to academic situations and subjects. As one senior educator said "after seven years of using Swahili at school, the students have to switch to English before they are even competent enough in academic Swahili". The situation is worse, say the senior educators at MTC, if the new language is taught badly in primary school and is not used for daily communication outside classrooms.

Language issues in Botswana—

"I left school as standard [year] two. My class teacher used to speak very fast and I did not understand Setswana or English. I was not following learning instruction. I failed all the class tests"

- early school leaver in Botswana 2007

There is an ongoing debate in Tanzania as to whether Swahili should be used in secondary education, at least at early year stages, or if improving teachers' classroom skills will reduce the problem. English is still felt by many to be important enough to remain the language of secondary schools. Which leaves the issue of the transitions – from a preschool home language to the language of the primary school, and then to the language of the secondary school.

Who will teach the pupils these languages of instruction, and who will teach the teachers? Most importantly, how quickly can the lack of communication between teacher and learner be resolved? These are questions that the Language and Literacy Project team are facing in their research, with Dr Mtana as a valued member of the team.

Literacy and Language Development Through Primary Education is an EdQual Project led by the University of Dar Es Salaam, Tanzania. Many children in Sub Saharan Africa are taught in a language which is not their first language; the project will identify practical strategies that teachers can use to help learners cope with the transition from an African language to English, in Tanzania and Ghana.

Science Talk – Teaching Strategies that Promote Learner Participation



*Audrey Msimanga,
University of the Witwaters-
rand, South Africa*

Audrey Msimanga is an EdQual-sponsored PhD Student based at Wits University, South Africa. Her doctoral study is supporting the research led by the EdQual ICC Project team (Implementing Curriculum Change to Reduce Poverty and to Increase Gender Equity).

The new curriculum in South Africa includes teaching strategies designed to promote learner participation in science. My doctoral thesis investigates these strategies; specifically whether and how teachers are using them. I have a particular interest in argumentation, one of the key skills identified for critical thinking in the new curriculum.

Argumentation involves developing the ability to use evidence to support a theory or inform decision-making. In the school science curriculum, argumentation can be used as a learning method, as part of discussions and group interaction. I have been reviewing the relevant literature and presenting to teachers on this subject.

However, after a series of classroom observations on teaching and learning in our schools, I have decided to look at science talk in general. Argumentation as defined by the curriculum requirements is proving a step too far for many of the teachers and pupils I observed; I am investigating how teachers can get learners to engage in ordinary but meaningful talk on science concepts.

My observations from science classrooms in South Africa are that pressures inside the classroom can inhibit both learning and teaching.

For example, where teachers are under pressure to complete the syllabus and prepare learners for examinations, they resort to teacher talk, to questioning for recall, and copious note giving.

Often the classes are very large and some are overcrowded, resulting in lecturer-style lessons and insufficient time on task. Sometimes there is a weakness in the teacher's skills – some teachers who do attempt to engage learners in discussions are not sure how to handle the ensuing debate.

Many learners simply do not talk. And even where discussion is successfully initiated, learners cannot formulate the kinds of arguments envisaged for argumentation. Usually it is the top achievers who make the assertions and claims, but arguments tend to degenerate to uncoordinated or defensive talk.

Interestingly, learner interactions outside the classroom contrast with what goes on inside the classroom. Discussions are characterised by the same lack of coordination but participants insist on evidence or grounds on which claims are made as well as clear links.



Science Teacher in South Africa

I have found that although learners have difficulty expressing their thinking in science classrooms, they do possess the capacity to do so. Perhaps the first task should be to get them talking and then progress towards the highly structured arguments envisaged for argumentation.

Source: Audrey Msimanga,
University of Witwatersrand South Africa

Basic mathematical and scientific knowledge can help communities combat HIV/AIDS, improve nutrition and manage their environment sustainably. Disadvantaged groups, including girls, face barriers to achieving in maths and science subjects. EdQual researchers are working with teachers in South Africa and Rwanda to design initiatives that will support schools to improve student learning and promote mathematical and scientific literacy in their local communities. Outcomes will be trialed in Pakistan to assess their suitability for another cultural context.

Education for All by 2015 - Will sub-Saharan Africa Make It?



In April 2000 in Dakar, Senegal, 164 countries sat down to work out how they could ensure that by 2015 every person in the world benefits from a proper basic education. The result was the six goals of 'Education for All' (EFA);

- 1) expand & improve early childhood care and education*
- 2) provide free & compulsory universal primary education by 2015*
- 3) equitable access to learning & life-skills programmes*
- 4) achieve a 50% improvement in adult literacy rates*
- 5) eliminate gender disparities in primary & secondary education by 2005 & at all levels by 2015*
- 6) improve all aspects of the quality of education*

Almost every year since, UNESCO (United Nations Educational, Scientific and Cultural Organisation) has published its Global Monitoring Reports. The GMR08 marks halfway to 2015 and looks at progress across all six goals. The good news from the GMR08 is that the number of children starting primary school has increased sharply since 2000; there are more girls in school than ever before and spending on education and aid has risen. On the down side, poor quality, the high cost of schooling and high levels of adult illiteracy are undermining the chances of achieving EFA by 2015.

The Education for All Development Index (EDI), calculated for 129 countries, shows that 25 of them are far from achieving EFA. Around two-thirds of these are in sub-Saharan Africa. And those are just the countries for which there is data. In addition, it may be assumed that most countries for which data is not available, will not achieve the goals.

The Colloquium on EFA\GMR, held in London in January08 included contributors from EdQual and CREATE RPCs. Participants observed that not only are the EFA goals interlinked (e.g. enrolments and quality in primary education are related to adult literacy and participation in early childhood care and education) but also that progress in education is interdependent with other sectors, such as health.

Sub-Saharan Africa is the region with the furthest to go but also the one making the greatest progress, particularly in access to primary education. Most African countries are categorised as having a low chance of achieving universal primary enrolment by 2015 but Rwanda is the only African country for which data is available that is considered at serious risk of not having primary education available to all by 2015. Not surprisingly, countries where primary enrolments rose sharply had generally increased their education spending, added to which, aid for basic education in low income countries more than doubled between 2000 and 2004.

Tanzania is an example of this success with the greatest rise in primary enrolments between 1999 and 2005; it achieved universal primary education in 2005. And while Ghana has recently achieved gender parity in primary education, 118 of 172 countries missed the gender parity index. Although the differences in performance have narrowed between girls and boys, they are still significant among other groups, such as poor, rural, urban slum, and marginalised indigenous and minority pupils.

Success has brought new challenges though; the most important one is keeping children in school. Since 1999, less than 63% of pupils reached the last grade of primary school in at least 17 sub-Saharan African countries. This high drop out rate is symptomatic of a number of quality issues. Language, school resources and environments, teaching skills and leadership are all subjects of EdQual's research projects featured in this Newsletter.

But the GMR also highlights successful initiatives; Cambodia now has scholarships, feeding and school health programmes, remedial classes, improvements to teacher training and funds to encourage teachers to work in hardship areas. In Pakistan, a mentoring programme improved the skills of 8000 teachers to teach multigrade classes more effectively. Zambia's *New Breakthrough to Literacy* course improved children's literacy in both a local language and in English during the first two primary school years. India has launched the world's first dedicated education satellite for distance learning courses.

Other country case studies and background papers, including EdQual's, are available on the UNESCO website; <http://gmr.uis.unesco.org/>.

Source: Dr Angeline Barrett, University of Bristol UK & UNESCOPRESS

Local Television — Mediae's Approach to Communication

Television is growing fast in rural Africa and has already reached saturation in urban areas, including slum dwellings, as one of the most popular ways of accessing news and entertainment. After news, locally produced dramas are the most popular viewing, preferred over imported shows with higher quality production. This makes television an important vehicle for research programmes such as EdQual to communicate with a broad audience, including teachers, pupils and parents.

Mediae produce just such a programme in Kenya, which is transmitted across East Africa. *Makutano Junction* is a television drama series that both entertains and educates its audience on issues related to health, gender equality, agriculture, education HIV/AIDS and citizenship. With the support of DFID, Ford Foundations and others, Mediae has trained a local team of ten scriptwriters, actors and a film crew to produce the programmes and it has already shown four 13-episode series.

Angeline Barrett and Rosemary Bosu, both EdQual researchers with responsibility for communications, took the opportunity to contribute EdQual research findings directly to the storyline of a future series. They worked with one of the scriptwriters, Naomi Kamau, herself a former teacher, to construct a storyline that illustrates EdQual's positions on such quality issues as medium of instruction and dependence of quality on context, as well as raising questions around the impact of the mushrooming private sector on quality and the challenge of making pre-school education more widely available.

Readers in Ghana look out for it — *Makutano Junction* will be appearing on your TV screens in 2008.



Actors and TV crew ready to film a scene for 'Makutano Junction', focusing on ethnic conflict. This was filmed two months before the recent disturbances in Kenya...



The 'think tank' - the scriptwriters put all their ideas for a story on a board for contributions, discussions and criticisms.

Source: Dr Rosemary Bosu, University of Cape Coast Ghana
Dr Angeline Barrett, University of Bristol UK

Mediae are a communications organisation working in television, video, radio and print, as well as media research and training. They also advise NGOs, donor organisations, and government departments on appropriate communication strategies. The organisation focuses mainly on rural and peri-urban communities whose access to information, new ideas and education is often limited and works with the local audience to involve them in the programme production at all stages. They also train the people they work with, and aim to develop communications that are appropriate, informative and sustainable.



The TESSA Programme



Teacher in South Africa

"Teaching is a job you must love and dedicate yourself to, to better who you are and to become a role-model for your learners and the community"

Mrs Muikweni,
teacher, South Africa

"A teacher is someone who gives you the green light to knowledge. Teachers are our future."

Goduka Andiswa
(aged 15) South Africa



Teacher in Sudan

"Using TESSA resources is the best way to teach science. I have used group discussions which resulted in good responses from my students who have thoroughly understood the lessons. I have found myself as a teacher, so I will adopt it for the rest of my life"

Fawziya, teacher,
Al Jazirah State of Sudan

TESSA has created a multi-lingual (Arabic, English, French, Kiswahili) bank of web and text-based teacher training materials, including audio resources. Over one hundred academics and one thousand teachers have been involved in designing TESSA's programme and materials.

The Teacher Education in Sub-Saharan Africa (TESSA) Programme's primary aim is to research and develop resources and systems that can help to significantly improve teacher education and meet the challenges of providing universal basic education by 2015. It is a research and development programme that aims to contribute to a better understanding of the factors and variables that facilitate the successful building of new models of provision in teacher education across Sub-Saharan Africa.

TESSA is an international partnership comprising 9 countries in Africa, 13 universities and 5 other international organisations. The participating countries are Ghana, Kenya, Nigeria, Tanzania, Rwanda, Sudan, South Africa, Uganda and Zambia and include EdQual's partners KIE in Rwanda and the University of Cape Coast in Ghana.

The Programme began in 2005, with the first phase focusing on basic education and aiming to deliver the following:

- A series of teacher-support modules, in different versions to fit national and local contexts, including local language versions.
- The adaptation of these materials for use across nine countries reaching up to half a million teachers
- A web site that will be Africa's largest on-line repository focused on teacher education and training
- The development of a range of audio and radio resources broadcast through the BBC World Service and for web-based use
- Research that will inform further development of the programme and publication of data on the TESSA development process. This includes a major research study: "Teachers' Lives in Challenging Rural Contexts"
- To engage in a dialogue with teacher educators across the region

TESSA provides a flexible resource specifically for local school-based and school-supported education and learning for teachers. The TESSA materials are free to use, adapt and share. These are focused on classroom practice in five module areas: literacy, numeracy, science, life skills, social studies and the arts and include 2250 classroom based activities. They are designed to support all teachers, including those with little or no formal training.

For more information and to access resources for teachers log onto www.tessafrica.net

Free Information and Resources

A Google search on 'teaching resources primary subSaharan Africa' can produce over 70,000 links. The links on these pages are a few of the reputable international sources of teacher support material. We hope these will be helpful to you; please contact us with details of any other sources you can recommend using the contact details on the back page.

UNESCO

www.unesco.org/education



You can access free downloadable material on the UNESCO website through the link to Education, and into Themes (eg. Primary Education, Teacher Education) or Countries (eg. Africa, Burundi). Clicking Teacher Education will also take you to the TTISSA site – the Teacher Training Initiative for sub-Saharan Africa

www.unesco.org/education/TTISSA.

There are also links to selected websites, such as the Global Learning Portal at www.glp.net. Most of the international resource materials here are free to download.

KALAFRICA

www.no-kaleidoscope.org/group/kalafrika/en/



Kalafrica is a website-based source of information, news and networking for people interested in the design and use of learning technologies in Africa. It is part of the Kaleidoscope series of resources but focused only on Africa.

Researchers and research students particularly will find Kalafrica very helpful, but it also has links to useful material for those teaching with technology in Africa. For example, two of the linked websites offer curricula and resources, including maths and science literacy, and health education, for primary and secondary education; Curriki (www.curriki.org/) and Mind-set (contact through Kalafrica).

Kalafrica also invites researchers and research students to join the international TeLearn (Technology Enhanced Learning) Network and hosts a blog and forum site for the exchange of ideas and questions. As the site develops, RSS feeds on resources will feed from TeLearn to the Kalafrica site.

The key contacts, Rosamund Sutherland of University of Bristol UK (ros.sutherland@bristol.ac.uk) and Nicolas Balacheff of Grenoble Computer-science Laboratory, France (Nicolas.Balacheff@imag.fr) handle queries in English or in French. Kalafrica is also actively supported by academics across the world, including Chile, Mali, Rwanda, Senegal, South Africa, Zimbabwe, Norway, France, and Canada.

ELDIS

www.eldis.org or email eldis@ids.ac.uk

Eldis is a knowledge service run from the Institute of Development Studies (IDS) at the University of Sussex, UK. Although mainly a website service, it does have telephone and postal contact details. It shares published documents on international education development, policy, practice and research. All are selected by the Eldis editorial team and available to download free of charge. (IDS is the copyright owner of materials on the website, except where otherwise indicated, and users need to check the conditions of use).

Eldis currently holds over 22,000 summarised documents from over 4,500 development organisations, including full text papers (mainly on international education research) and resource guides (giving quick access to key documents, organisations, discussions and other websites). It also carries country profiles.

The following examples of practical resources were found at www.eldis.org/go/topics/resource-guides/education/

A Practical Guide for Improving Gender Equity in African Universities is a toolkit for tertiary education institutions in Africa. Intended for academic leaders, managers, staff and students, it covers staff recruitment, student welfare, curriculum development and the general institutional culture.

A Practical Training Guide for Teachers of Multigrade Classes is for teachers who may have received little or no training in multigrade teaching. Although it was originally designed for teachers in Sri Lanka, it is suitable for use in a variety of settings where multigrade teaching is used, either as part of in-service training sessions or as self-study.

The Teacher Training Manual for HIV/AIDS Prevention and Care aims to train teacher educators using participatory active learning. Its eleven modules help teachers prepare teaching-learning plans, develop materials and devise assessment tools, as well as teaching life skills techniques and learner-centred activities.



Primary class, Nigeria

**EDQUAL IS A
CONSORTIUM OF SIX
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Sources for Resources

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EdQual Publications



These papers are among those listed on the EdQual website and are free to download. They can also be obtained by contacting the EdQual team in Bristol, or your local institutional co-ordinator (cf left and below for details).

Initiatives to Improve the Quality of Teaching and Learning: a review of recent literature (2007). Background paper written by the team who authored the EdQual contribution to the Education for All Global Monitoring Report 2008; A.M.Barrett, S.Ali, J.Clegg, J.E.Hinostroza, J.Lowe, J.Nikel, M.Novelli, G.Oduro, M.Pillay, L.Tikly & G. Yu. The paper focuses on issues and examples of recent initiatives to improve education quality, including meeting diverse learners' needs, curricula for relevant learning, and enabling teachers. The writers conclude that successful initiatives to improve education quality all strengthen the three-way relationship between teacher, learner and materials, and are responsive to social context.

Education Quality: Research Priorities and Approaches in the Global Era (2007) L.Tikly & A.M.Barrett. The paper was presented at the 9th UKFIET International Conference, University of Oxford, UK in September 2007. It sets out EdQual's views on what education quality means and the main characteristics of the RPC's approach to researching Education Quality in Africa. One of the key principles is that

"any understanding of education quality in sub-Saharan Africa needs to be grounded in the realities and perspectives of Africa's policymakers, researchers, practitioners, learners and communities."

Implementing Curriculum Change Project Literature Reviews: Pakistan, South Africa and Rwanda (2007) R.Barwell, K.Bishop, S.Erduran, A.Halai, D.Iyamuremye, T.Nyabanyaba, N.F.Rizvi, S.Rodrigues, J.Rubagiza and A.Uworwabayeho. This comprehensive literature review focuses on the teaching and learning of science and mathematics in South Africa, Pakistan and Rwanda. It is concerned in particular with improving gender equity in science and maths classrooms, and the contribution of curriculum to poverty alleviation.

Report on a Needs Analysis Workshop with Headteachers and Ward Education Co-ordinators, Tanzania 15-16February 2007 (2007). This is a report from a workshop involving headteachers from primary schools in Tanzania. Participants felt strongly that a record of their discussions on such key issues as creating child-friendly environments, academic leadership and the skills that headteachers need to manage schools in decentralised systems would be valuable both to themselves and to other headteachers and education managers.

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